FOR THE RADIO LISTENER

shortwave magazine

November 1992 £1.75 ISSN 0037 - 4261

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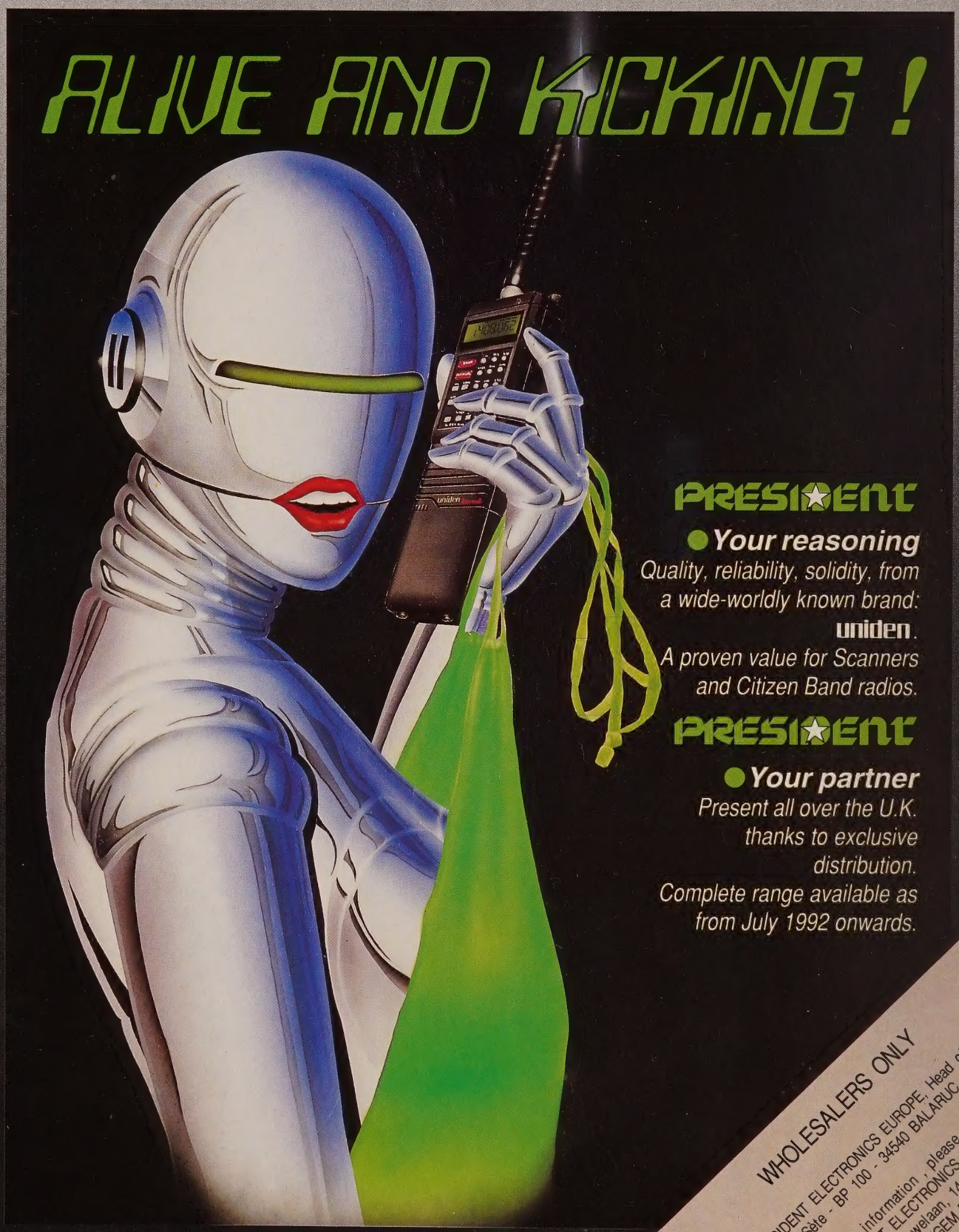
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# editorial

## SWM SERVICES

### Subscriptions

Subscriptions are available at £21 per annum to UK addresses, £23 in Europe and £25 overseas. Subscription copies are despatched by accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both *Short Wave Magazine* and *Practical Wireless* are available at £36(UK) £39 (Europe) and £41 (rest of world).

### Components for SWM Projects

In general all components used in constructing *SWM* projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

The printed circuit boards for *SWM* projects are available from the *SWM* PCB Service.

### Back Numbers and Binders

Limited stocks of most issues of *SWM* for the past five years are available at £1.80 each including P&P to addresses at home and overseas (by surface mail).

Binders, each taking one volume are available for £5.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

Orders for p.c.b.s, back numbers, binders and items from our Book Service should be sent to: **PW Publishing Ltd., FREEPOST, Post Sales Department, Enefco House, The Quay, Poole, Dorset BH15 1PP,** with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in Sterling.

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Poole (0202) 665524. An answering machine will accept your order out of office hours and during busy periods in the office. You can also FAX an order, giving full details to Poole (0202) 666244.

### The Ailing Pound

It is a fact of life that a large proportion of radio gear sold in this country is imported. The problems affecting sterling have already started to have an effect on the price of radio equipment advertised in this magazine. Before ordering any radio equipment from advertisers you are advised to telephone to confirm prices. This might also be a good time to think about 'buying British' wherever possible.

### Letters

We are still having problems in finding enough time to produce the magazine and answer letters and questions from readers. This gets particularly acute when any member of our staff takes holiday. So, if you are still awaiting a reply to a letter, please bear with us. I am sure that you would rather have the magazine taking priority - after all, more than 18500 of you out there want to read *Short Wave Magazine* each month and I would be very unpopular if an issue was missed or published late, because I was answering individual readers' letter.

I would also like to point out that it puts me in a very difficult position when I am asked to give my opinions on particular radios. Like motor cars, radios are personal things. What suits one operator might not appeal to another - as long as the performance is adequate I would suggest that only the operator can decide which set he, or she, prefers. Nuff Sed!!

# letters

**Dear Sir**

May I first thank you for a superb magazine. I find most aspects of it very readable and extremely interesting. Praise aside, however, there is one feature that I feel is obviously amiss; a problem page.

As a professional computer programmer and an avid reader of a myriad of computer magazines I have found that one of the most interesting parts of these magazines is the problem page. This is true for both myself and my colleagues. Although computing is a very broad subject with infinite aspects, any problems can be tackled, from the most fundamental to the most specific and intricate. Irrespective of the areas of the problems, they invariably prove to be entertaining and informative. I feel that this type of feature would make an excellent translation to *Short Wave Magazine.*

I do recognise that readers' queries are dealt with in the various sections of the magazine but I feel that the format of a problem page is much more interesting. Here a reader's question is stated verbatum and a direct reply is given. The present regular columns could still focus on activity on their particular bands but the 'hardware' queries move to the problem pages. The current columnists could contribute answers to the problem page in a consultative manner.

As an illustration to the type of problem you could address, may I air a particular difficulty I am experiencing:

"I use a Sony 2001D, and a.t.u. and a 5m random wire. About 50 metres from my house is a chip shop with a flashing neon sign that remains on until around 1am each morning. This produces an annoying click over all the h.f. bands. As the Sony lacks a noise blanker I seem to be stuck with it. Any suggestions?"

Another feature I am sure would attract a lot of interest is a product listing. This would be a listing of currently available receivers and accessories. For each receiver there would be a summary of its features such as frequency coverage, reception modes, filters, frequency display type, frequency resolution, retail price, date when reviewed and any other relevant information. This type of listing would prove invaluable to anyone considering buying new or second-hand equipment. (See *What Hifi* for an example of this type of listing).

**Mel Mullen**
**Co. Down**

IF YOU HAVE ANY POINTS OF VIEW THAT YOU WANT TO AIR PLEASE WRITE TO THE EDITOR. IF YOUR LETTER IS PUBLISHED YOU WILL RECEIVE A £5 VOUCHER TO SPEND ON ANY *SWM* SERVICE

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to any other magazines. The views expressed in letters published in this magazine are not necessarily those of *Short Wave Magazine.*

**Dear Sir**

I was most interested in the letters from Michael Ker and Andy Goodwin in the August issue, in which they mention Polish Radio schedule and about the return of Radio Kuwait. The trouble as you rightly mention is lead times in preparing a magazine like *SWM,* having it printed and distributed, which all takes time. This is where being a member of a DX/SWL club comes in, they produced some excellent bulletins each month with a quick turn-round time of 10 to 14 days. Some clubs were mentioned in 'Junior Listener' recently.

I am sure you can get a list of clubs from the European DX Council, PO Box 4, St Ives, Huntingdon, Cambs PE17 4FE for 70p plus an s.a.e.

On the subject of changes, Polish Radio have added a further English transmission at 1830-1925 on 7.145 and 9.525MHz, this is a repeat of the 1700-1755 transmission.

**Edwin Southwell**
**Basingstoke**

# letters

**Dear Sir**
I suspect that Mr Sennitt may be very wrong when he suggests that it is naive, "to believe that more than a handful of French listeners ever tuned in to BBC Radio Two".
I must admit that I cannot be sure about Northern France, but I can assure Mr Sennitt that when Radio Two was available on long wave, it was very widely listened to in Belgium and Holland, simply because it was the only broadcast to provide easy-listening, middle-of-the-road music.
Indeed one of the most common sounds in cafés and restaurants, and on car radios at the traffic lights, was Radio Two.
Willy-nilly, Radio Two on long wave did 'sell' some British culture at the popular level. For better or worse, BBC World Service (and Radio Four) have an audience limited to the intellectual elite alone.
**J. Humbach, Belgium**

**Dear Sir**
I read Steve Rawdon's letter with great interest for two very good reasons. I also bought a Yupiteru 225 earlier this year, partly as a result of reading Chris Yates' review in the April *SWM* and partly on some good advice from Andy and Mike at Air Supply.

The 225 has exceeded all expectations in sensitivity and in audio quality. I have spent most of the summer measuring its effective listening range (e.f.l.) and the results have been quite amazing. My mobile listening post is 366m a.s.l. with a clear horizon for the full 360°. Using a centre-coil loaded magmount antenna on the car roof gives a slightly stronger signal response that the one provided. Here are the measured e.f.l.s for increasing aircraft heights:

| | |
|---|---|
| Flight level 70-110 | 190-210 miles |
| Flight level 120-240 | 210-250 miles |
| Flight level 240-350 | 250-290 miles |
| Flight level 350-390 | 290-320 miles |

The extreme sensitivity is demonstrated in the set's ability to bring in the controllers on 20 different frequencies including Shanwick Oceanic Clearances.

My second point of interest was his question regarding h.f. airband signals from the South Pacific. This happens to be the area of the world that I regularly monitor and quite successfully. At the moment Sydney ATC is clearly audible between 0500 and 0730UTC on 8.867MHz. Darwin comes in a bit later at about 0700UTC on 11.396MHz. From October through to March there are good signals on 11.396MHz between 1600 and 1800UTC, but these are often swapped by New York Centre using the same frequency. I would be pleased to correspond with Steve concerning this activity. My rig comprises of a Yaesu FR-8800, Yaesu a.t.u. and a 20m wire across the roof-tops, 10m above the ground. It is aligned horizontally on a heading of 310-130°
**Chris Haigh**
**Huddersfield**

**Dear Sir**
I write only hours after receiving Radio Beijing's bi-monthly magazine. On the front cover it says that "Beginning January 1st, 1993 Radio Beijing will change its name to China Radio International, CRI". But by the way of transition, the new callsign will be used beginning October 1 this year, along with the present, "This is Radio Beijing".

The reason or purpose of the change is to make the station foreign language identical to its Chinese name, also it's to distinguish the station - China's Only External Radio Service - from local stations, especially to avoid being confused with the local Beijing Radio. Apparently such confusion in the past had often resulted in misplaced mail!

The bi-monthly magazine *The Messenger* is free to anyone who writes in and asks, the address is: The Messenger, English Dept., Radio Beijing, Beijing, China 100866.
**Lee Williams, Birmingham**

**Dear Sir**
With reference to the 'hams' phonetic alphabet mentioned by J.A. Thompson (Aug *SWM*). In my early days of s.w. listening I seemed to remember Holland and Italy being regularly used as H and I. Thus I looked up an old RSGB *Amateur Radio Handbook* (kept for sentimental reasons) and found the following list under Chapter Twenty entitled "The Newcomer to Amateur Radio".

| | | |
|---|---|---|
| A - America | J - Japan | S - Santiago |
| B - Boston | K - Kentucky | T - Turkey |
| C - Canada | L - London | U - University |
| D - Denmark | M - Mexico | V - Victoria |
| E - England | N - Norway | W - Washington |
| F - France | O - Ontario | X - X-Ray |
| G - Germany | P - Portugal | Y - Yokohama |
| H - Holland | Q - Quebec | Z - Zanzibar |
| I - Italy | R Radio | |

The Handbook was the 10th printing Jan 1944 (purchased 1946) which shows up my age, though I hasten to add that my first s.w. listening began when I was 12 years old!
**Alan J Thorndyke**
**Enfield**

**Dear Sir**
I did not intend to reply to Mr Deaville of Stockport for I found his letter most interesting and instructive. He has certainly done his homework. However, I must protest at his implied suggestion that I never heard the phonetics, which I described.

Long before the days of sliced bread, I built - on Grandma's bread-board - an 0-V-1, which the Mr F.J. Camm, mentioned by him, had recommended. It didn't work all that well, probably 'cos I included too many dry joints. But I well remember a certain W2MI who, I believe, was transmitting from the depths of San Quentin.

Radio hams are, and always will be, pretty much free souls when it comes to phonetics he used to say, "This is Dubble Yew Too Murder Incorporated"!
Hurrah for originality!
Alas. Where is he now!
**J.A. Thompson**
**Dover**

**Dear Sir**
With reference to Mr N. Coe's letter on the subject of pirate stations, he mentioned one operating on 6.210MHz. Three or four weeks ago, I picked up the tail-end of a programme on this frequency. The announcer concluded with the information that I had been listening to Radio Croatia International - another mystery solved?
**H. Reading**
**Wimborne**

**Dear Sir**
Reference the aerial eliminator, mentioned in the September *SWM*. I think you will find it was an electrolytic condenser, one lead to the set aerial, the other to the water-pipe, the set earth wire was stuck in the pitch.

In the 1930s we had a gadget called a 'Pix'. This was put in the aerial to cut out the local stations, improve the tone, etc. I don't know what was in it, but it cost 2/- in 1932.
**John Tye**
**Dereham**

**Dear Sir**
Further to J.A. Thompson's letter in August *SWM* about the phonetic alphabet and H. Deaville's comments in September, I would like to point out that J.A. Thompson's letter is quite correct. The phonetic alphabet was in amateur use for many years before the '39-45 war.
**E.F.C. Owen (ex RAF wireless operator/mechanic)**
**Reigate**

## *WINNING COMMENT*

The front cover for August showed, according to Mr V Prier, "seen here competing in the National Speed Soldering Championship, succeeded in soldering a sixty-pin i.c. in the phenomenal record breaking time of 1 min 10.26 seconds. He was, however, disqualified when 59 connections were found to be dry joints".

# junior listener

Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

## Name that Tune

The radio station KNLS usually play the theme tune *Chariots of Fire,* but recently they've introduced a new un-named tune, this will be their new theme tune from September 27. They're looking for listeners to name the new KNLS theme song. Try listening at 0800 and 1300 on 7.365MHz or 0800 and 1300 on 9.615MHz as the tune will be played on the hour. KNLS, PO Box 473, Anchor Point, Alaska, USA.

## Young Amateur of the Year

The 1992 Young Amateur of the Year Award has been awarded to 17-year-old Martin Saunders G7JCJ, who lives very close to the Editorial Offices of *SWM* in Dorset. Martin received his first prize of £250 and a certificate signed by Michael Heseltine at the HF Convention. Martin's main interest is in packet radio and has been appointed Secretary of his local packet group. He is a member of the Flight Refuelling ARS, who I'm sure are justifiably proud of him.

## Programmes to Listen For

Radio Austria International runs a programme called *Shortwave Panorama,* which can be heard on Sundays at 1230UTC. Try listening on either 6.155MHz in the 49m band or 13.730MHz in the 22m band. Radio Austria International, A-1136 Wien, Austria.

I received a few QSL cards from Radio Vilnius recently. They broadcast in English every day at 2130UTC on 666kHz, 9.675MHz and 9.710MHz. At 2300 they change frequency to 9.530, 17.605 and 17.690MHz. They confirm reception reports with QSL cards, but you need to tell them the reception date, time, frequency and programme details correctly to get a reception card. Also listener's comments and suggestions are most welcome. Radio Vilnius, PO Box 1747, 232019 Vilnius, Lithuania.

RADIO VILNIUS LITHUANIA

Jonathan Marks from Radio Nederland is the photographer behind a limited edition of QSL cards they are sending out at the moment. He went to the Keukenhof, a 70 acre show garden just outside Lisse and now there are four floral cards to collect. A good programme to listen for is *Media Network,* hosted by Jonathan. It's a weekly survey of communication developments compiled with the help of over 190 monitors across the globe. You have two different days to catch the programme. Thursdays at 0150, 0750, 0950, 1150 (5.955MHz), 1350, 1550, 1750 (21.590MHz) or 1950 (21.59 & 17.605MHz); or Fridays at 0050, 0250 and 0350. Radio Nederland, Postbus 222, 1200JG Hilversum, Nederland.

## New Radio News

The BBC is now preparing to launch an all news radio network. It's scheduled to go on the air in early 1994 and will be broadcast on long wave - using the present Radio Four frequency. The service should all a better range of issues to be covered than is possible in exisiting bulletins.

## Addresses

Croation Radio Zagreb, 41000 Zagreb, Croatia, Yugoslavia.
WSHB, Cypress Creek, South Carolina, USA
Radio Vatican, Vatican City, Rome, Italy
Voice of Turkey, PO Box 333, 06.433 Yenisehir Ankara ,Turkey
I've had recent correspondence with these stations, so the addresses do work.

## Books to go on your Christmas List

Do you know how your short wave radio works? It's not as daunting a subject as all that and I recently received a book from the USA that explains this kind of thing really well. Starting with a bit of history, the author then starts with a typical superhet receiver and breaks that down into the various parts that make up your receiver. All kinds of usually 'technical' subjects are dealt with - phase locked loops, i.f. filters, exalted carrier single sideband, panoramic adaptors, antenna connections, etc. the only problem is that the book isn't easy to obtain here in the UK. If you can persuade someone with a credit card to buy it for you then things become much easier. The book is called *Inside Your Shortwave Radio,* from Tiare Publications, PO Box 493, Lake Geneva, WI 53147, USA. Tel: 0101 414 248 4845. It costs $14.95 plus $3 postage and packing.

The next book is also from Tiare and is called *Secrets of Successful QSLing - The Complete Guide to Reception Reports and QSL Collecting.* QSL collecting is a big part of many listeners hobby, especially 'junior listeners'. This book just gives you guide-lines, showing you how to write a report, foreign language reporting, , following up a report and lots more. After sitting and reading the book I realised there was a lot more to QSLing than just sending out one report to a station. If you don't get a good success rate, then this book gives you plenty of ideas to try. Priced at $12.95 with $3 postage, it's again well worth putting on your Christmas List.

## Sporting Enthusiasts

Denmark seems to be a nation of sports enthusiasts, the two broadcasting services DR and TV2 in Denmark broadcast a total of 425 hours of the Olympics earlier this year! Apparently every viewer over 12 watched an average of 65 minutes on DR TV and 59 minutes on TV2. Of those with Teletext, 53% consulted the pages for news and results!

# news

## New Catalogue

The 1993 Greenweld Catalogue is now available. The 164-page book also has a 32-page Bargain List tucked inside its pages. The cost is £2 UK or £4 overseas.

**Greenweld Electronic Components, 27 Park Road, Southampton SO1 3TB. Tel: (0703) 236363.**

## New Stations for Asia?

After months of deliberation, a US Congressional Commission has recommended that the United States should significantly expand broadcasting to China and the other Asian nations under communist regimes. The aim, according to the Commission, would be to provide uncensored news and information as well as to 'encourage peaceful moves toward democratic forms of government'.

The Commission believes the success of Radios Free Europe and Liberty in helping to bring down communist governments by surrogate domestic broadcasting - in other words beaming radio programmes of the types that citizens of eastern European countries would have had if they had been free - could be repeated elsewhere. The aim of new surrogate radio services would be to provide citizens of totalitarian Asian countries with objective news and uncensored commentary about events and developments in their own countries, in their own language, or 'the kinds of information that would be available if there were no government censorship and no repressive control of the media'.

Target countries for the new services - perhaps to be known as Radio Free Asia - would be China, North Korea, Vietnam, Cambodia, Laos, Tibet and Burma.

There has been some opposition to the idea and indeed the decision of the eleven member commission was not unanimous. Some members of staff at the Voice of America believe that the US would be better served if all American international broadcasting was under the banner of the Voice rather than the more closely government run Board for International Broadcasting, which is responsible for Radios Free Europe and Liberty.

The start up costs of the new services have been estimated at US$30 million and annual operating costs of US$35-39 million. Whilst it will be interesting for DXers to seek out the new services, could the minus side be the return of widespread jamming? China already jams BBC World Service and the Voice of America in Chinese, but it is not terribly effective. The establishment of the new stations could mean, however, that the People's Republic turns some of its broadcasting transmitters in to more effective jammers.

## Pirate Radio

Stiffer penalties for pirate radio stations came into effect on September 30. Now the fine that can be imposed in a Magistrates Court is increased from £2000 to 35000. In Crown Courts the fine continues to be unlimited.

Some examples of pirate radio the Radiocommunications Agency quote are, " In one instance a pirate radio station was raided after it had interfered with the communications of an airport, the police, a bus company, the local authority, a legitimate community radio stations and spoilt reception for many law abiding people.

"Pirate radio stations are a menace. They steal radio spectrum and create unfair competition to legitimate broadcasters. The consequences of their interference ranges from simply spoiling the pleasure of ordinary viewer and listeners to seriously hampering the world of the emergency services.

"Maximum penalties that can be imposed for pirate radio offences are a £5000 fine, six months imprisonment and forfeiture of equipment on conviction in a Magistrates Court. In a Crown Court an unlimited fine can be imposed, with a maximum two years imprisonment and forfeiture of equipment."

## New VoA Relay

The Voice of America is reported to have signed an agreement with the Kuwaiti government for the construction of a new relay station in the Emirate. The agreement, which lasts for 20 years, will allow VoA to construct up to 11 medium wave and short wave transmitters to cover the region.

Presumably, this new facility is designed to replace the proposed site in Israel's Arava Desert, which has been delayed by environmentalists worried about the effect high powered radio transmissions would have on birds whose migratory routes pass over the desert.

## Aeronautical Mobile Amateurs?

Following an initial approach made to the Radiocommunications Agency by the RSGB some three years ago, there is now a possibility that Aeronautical Mobile may come within the terms of the Amateur Radio Licence. The Civil Aviation Authority, which is responsible for the approval of airborne radio equipment, has been consulted and has requested a meeting to discuss standards, limitations and procedures. They have indicated a preference that 'approval applications, fees and technical submissions come from a single co-ordinating body'.

In order to fully represent the views of the UK radio enthusiasts, the RSGB would like comments from anyone with an interest in it. For instance: how useful would the facility be? What facts are available on the safety implications? What are the views of radio enthusiasts who are fliers themselves?

Comments should be sent to: **Chairman of the RSGB Licensing Advisory Committee, John Bazley G3HCT, Brooklands, Ullenhall, Nr Henley in Arden B95 5NW.**

## Diplomas

Radio Sofia have three awards short wave listeners can aim for, their Bronze, Silver and Gold Diplomas.

**Bronze Award**

For the reception of the 1st QSL card in the series you are required to file one reception report. For the 2nd card two reports need to be filed within a period of two weeks. For the 3rd card its 3 reception reports in three weeks and so on until you get the 6th card for six reports in eight weeks. The last QSL card in the series will be accompanied by the Bronze Diploma of Radio Sofia.

**Silver Award**

First card needs two reports in one week, 2nd card is three reports in one week, 3rd card is four reports in two weeks, 4th card is six reports in two weeks, 5th card is seven reports in four weeks, 6th report is eight reports in five weeks. Again the last QSL is accompanied by the Silver Diploma

**Radio Sophia, Bul. Dragan Cankov 4, 1421 Sophia 21, Bulgaria.**

# news

## Radio Norway May Lose English Service

The Norwegian Foreign Ministry has announced its intention to stop funding the English Service of Radio Norway International from next year. The English Service operates on Saturday and Sunday with 30 minute programmes beamed world-wide. Apparently, the Norwegian government feels that it can use the cash to greater effect by concentrating on other cultural promotions overseas that are more likely to reach opinion formers around the world.

The Norwegian service is funded by the Norwegian Broadcasting Corporation, NRK, as part of its remit to reach Norwegians wherever they are in the world. NRK is reported to be examining the feasibility of obtaining funding from elsewhere, as it does not believe that broadcasting in foreign languages is part of its core activities.

If you wish to support the service, you may care to write to:

**The Director General, NRK, Bjornst Bjornsons plass, N-0340 Oslo 3, Norway.**

## Clandestine Station

The station Democratic Voice of Burma has been beamed from Norway for 30 minutes daily for some weeks at 1430 on 17.845MHz. This station is run by the exiled Burmese opposition parties and the transmitter time is provided free by the Norwegian Foreign Ministry.

## Plug-in Coil Formers

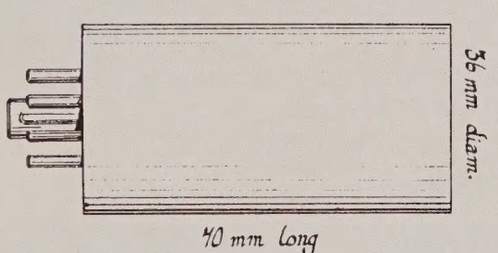
To satisfy the demands of many radio construction enthusiasts, Isoplethics are producing International-Octal based plug-in coil formers for short wave receiver, grid-dip oscillator and antenna tuner applications.

Former bodies 36mm diameter, close to the 1.5in standard and 70mm long are machines from rigid pvc tube. A Bakelite International-Octal plug base is keyed to the body with an internal, cast, polyester-resin locking ring to achieve a mechanically rugged design for frequency changing of coils.

The use of modern low-loss plastics allows the traditional ribs to be dispensed with. Windings can be firmly attached to the formers with a solvent cement. Coil *Q* of 250 at 17MHz can be achieved with copper wire windings with a *Q* reduction due to the former of less than 4%.

The formers cost 3.50 each including VAT and P&P.

**Isoplethics, 157 Mundesley Road, North Walsham, Norfolk NR28 0DD. Tel: (0692) 403230.**




## New Magazine for the BBC World Service

Since the beginning of the BBC's Empire Service in 1932, listeners around the globe have used *London Calling* to check on frequencies and to see what programmes are coming up in the English language World Service. But in this 60th anniversary year, World Service is to replace the 28-page programme guide with a 100-page full colour magazine called *BBC Worldwide*. Published monthly, the new magazine will carry feature articles written by BBC correspondents and programme makers as well as providing the usual frequency guide and day-by-day programme listings for World Service radio in a revamped centre *London Calling* section. And for the first time, comprehensive listings will be included for World Service television, currently available in Europe, Africa and Asia

The first edition of *BBC Worldwide* will be the November issue and went on sale October 1. For subscription details, Tel: 071-257 2211.

## BARTG AGM

The British Amateur Radio Teledata group will be holding their AGM on November 14 at 2pm in The Green Wine Bar & Restaurant, The Green, Mere Green Road, Four Oaks, Sutton Coldfield. Among the topics for discussion will be the subscription rate for 1993, plans for the 1993 rally, the direction for the group over the next few years and the election of the new committee

If you intend to go to the AGM, please contact:

**Ian Brothwell G4EAN, 56 Arnot Hill Road, Arnold, Nottingham NG5 6LQ. Tel: (0602) 262360.**

## TV DX News

The Thai government in Bangkok have given permission for five new TV channels, two of these being 'private' owned and offering an information, news and entertainment service, the other three will be operated by the state following a policy of general education and social welfare within the programme make-up. Initially all five channels were intended for private ownership but this was reduced to only two.

At least 5 unauthorised TV stations are now operating in Poland, being frustrated at the long government delays in formalising their operation and have gone on-air prior to receiving their licences.

French networks Antenne 2 and FR3 have now merged into a single administrative group although they continue to provide individual network programming as before, now being called 'France 2' and 'France 3'.

NHK Tokyo have constructed a digital SNG (satellite news gathering) unit that can compress 216Mbit/s into 7Mbit/s. This allows dual TV channel operation within a single transponder, furthermore a smaller dish and lower power can be used than compared with conventional f.m. SNG operations, an equivalent quality signal can be transmitted with 20 watts into a 1.2 metre dish whereas formally 100W would be required into a 1.8m dish.

In Australia extensive use is made of the v.h.f. f.m. band at 99.90MHz for low power real estate 'talking homes' service. A small transmitter is placed within a 'house/office for sale/lease' and this radiates a taped description of the site to prospective viewers when they drive up and look, merely tuning the car radio to 99.9MHz for a recorded commentary. Though in theory very short range, some have been received by DXers over many miles. In Melbourne City, Woodwards Real Estates and MEPC Australia Ltd have been monitored nearly 16km distant. And another use for low power radio is Tourist Radio in various parts of Victoria State, operating between 88.7-88.9MHz.

Good news for TVDXers in Europe. Albania has released a TV transmitter list with some remarkable details. Though Tirana has operated for years on Ch. 1C, there are a vast number of relays operating in Band I - though too extensive to detail here, there are 3 on Ch. E2 - the highest power being 50W; on Ch. E3 there are 6 relays - the highest powers are at 30 and 20W; Ch. E4 is the most remarkable with 30 (!) relays, again the highest power is 50 watts. These must be possible via Sporadic-E, on a personal note in 1972 I received RUV Iceland Ch. E2 when the only transmitter on the channel was a 10W relay, and the receiving antenna cross dipoles.

**Roger Bunney**

# When it comes to sheer know-how
# Look to Lowe

# The NRD-535 with a subtle difference

The NRD-535 is a fine receiver, and fully confirms the JRC leadership in this particular field. However, even the best can be improved in specific areas; and after lengthy evaluation of the NRD-535 we decided that there were worthwhile improvements which we at Lowe, with our knowledge and specialist expertise could introduce to the more discerning listener – for it is the true "listener" who will appreciate what we have done.

First; we thought that the audio from the NRD-535 was not totally easy on the ear, and detailed investigation showed that the audio response had been "tailored" to suit the rather round shouldered response of the IF filtering. So, we went back to the IF filters and specified a higher performance SSB crystal filter with a 6dB bandwidth of 2.4kHz and a typical shape factor of 1.8:1; with less than 1dB passband ripple. For AM, we fit a more expensive filter with a 6dB passband of 5.7kHz and a shape factor of 1.5:1. The response of these new filters is very flat within the pass band, with steep symmetrical sides giving excellent adjacent channel rejection. The use of these more expensive filters allowed us to flatten the audio response of the receiver giving a much cleaner sound quality and a real improvement in intelligibility both on communications and broadcast stations.

We have noticed in the past that the audio output power from most modern receivers is barely adequate for driving a good loudspeaker, and since we now had top quality audio from the NRD-535, we designed and fitted a completely new audio power amplifier with enough power (3W at 5% distortion) to enable the user to sit back and enjoy that quality to the full.

The use of synchronous AM demodulation and/or ECSS is an established feature of many newer receivers, and fitting the optional CMF-78 ECSS board to the NRD-535 provides the user with the potential to recover good audio from signals which are subject to selective fading.

However we noticed a tendency for the ECSS to unlock during deep fades and then fail to re-lock after the fade. We now have a series of detailed modifications to the ECSS unit which removes this tendency and also improves the recovered audio.

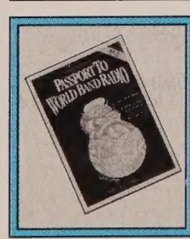
The Lowe Electronics modification pack definitely makes a good receiver into an outstanding receiver. When we sent a sample of our modified NRD-535 to Jonathan Marks at Radio Nederland, he confirmed that the results were quite remarkable and said so in no uncertain terms. We think that you will agree.

Naturally, these modifications cost a little more, but to complete the whole package we also pre-age the master reference oscillator in the receiver, check out the alignment, and issue an individual test certificate with each one. And because we are proud of our work we add a discreet badge to the front panel to tell you that you own a receiver with a difference.

The "Lowe" NRD-535. We make a good receiver into an outstanding receiver.

- New high specification IF crystal filter for SSB
- New high specification IF filter for AM
- New calculated audio bandwidth "flattening".
- New higher power audio output system.
- New tighter specification ECSS system.
- Pre-ageing and "burn-in" of master oscillator.
- Individual test certificate for each receiver.

| | |
|---|---|
| **NRD-535** | **£1195** |
| **CMF-78 ECSS unit** | **£239** |
| **Lowe modifications** | **£117** |
| **Carriage** | **£10** |




**THE LISTENERS' BOOK OF THE YEAR GOES FROM STRENGTH TO STRENGTH**

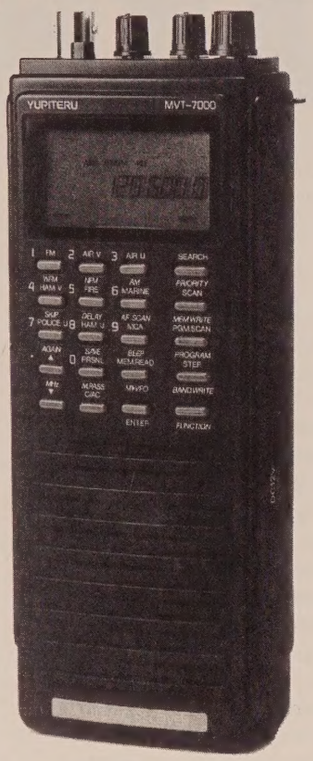
I'm very pleased to tell you that we now have the 1993 issue of the *Passport to World Band Radio* in stock, and for the third year running we have managed to keep the price down to £12.95 (plus £1.55 p&p). If you own a short wave radio you simply MUST have the *"Passport"* by your side. With bang up-to-date frequency listings, news and views from the world of short wave, and the best and most respected receiver reviews in the business, the *"Passport"* is your passport to enjoyment. Send for it NOW before we run out.

LOWE

# LOWE ELECTRONICS LIMITED

Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone: 0629 580800 Fax: 0629 580020

# For the very best in Communications Receivers Look to Lowe




## VHF/UHF RECEIVERS.
## *We stock the lot – from* AOR to YUPITERU

Although our real love is HF, we recognise that many folk find that a handy VHF/UHF scanner provides a lot of listening enjoyment, and we stock all of the popular makes.

We also insist on telling the truth about them, and there are a couple of basic rules to observe. First, I know that they say the scanners will cover from 500kHz to 1300MHz, but if you think that they will perform on short wave – forget it. They are all barely adequate (except the AR-3000A but that's in a class of its own). Secondly, if you want to particularly listen to airband, for goodness sake buy a dedicated airband scanner because it will handsomely out-perform all of the wide frequency range receivers, (except again the AR-3000A).

Currently top of the shop are the VT-225 and VT-125 from Yupiteru. Daft name, but good gear. The VT-125 is VHF airband only, and the VT-225 gives both VHF and UHF airband. Prices are good at £169 for the 125 and £249 for the 225.

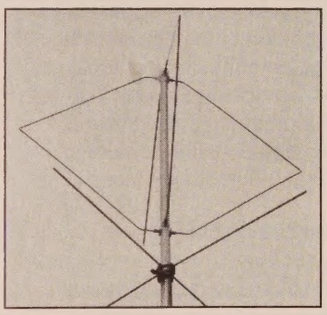
For wide range scanning, the MVT-7000 has established a good reputation for styling, ease of use, and good performance. Full coverage and 200 memory channels. Nice one. £319.

The new AR-1500 from AOR is interesting, because it is the first hand-held to offer a BFO for receiving SSB on short wave. (It covers 500kHz to 1300MHz by the way). My first reaction to its announcement was less than enthusiastic, but even I will say that it can make a reasonable job of SSB even though it is a long way from being a short wave receiver. Small and handy, the AR-1500 comes in at £299.

The AR-3000A – now this does stir the blood because it is an amazing achievement. To pack such a receiver in such a small package takes a lot of engineering, but the performance is excellent, and I can recommend it – only snag is the price, but for £799 it's a H*** of a good radio.

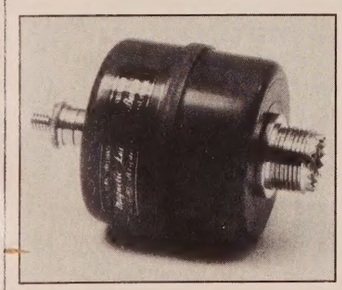
Want to know more? Just ask for full details at any of our branches, or send 4 first class stamps and request the "Airband Pack". Call in and see us soon for all that's good in receiving – DC to light.

# RF SYSTEMS PRODUCTS



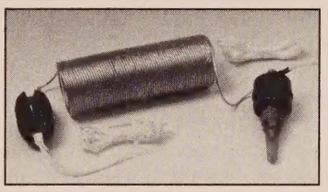
### DX-One Electronic Antenna

Not cheap – but as World Radio TV Handbook said:- "...the best of its type available anywhere in the world". The DX-One is an outdoor active antenna for the range 50kHz to 50MHz, and cannot be bettered.....**£279 inc VAT**



### Magnetic Longwire Balun

Transform (that's a pun) your short wave listening with the MLB. Described in the trade press as "the most revolutionary development for short wave listeners in the last 25 years." You have to believe that with a modest length of wire fed via the MLB, your reception will improve substantially, and the noise will go down.....**£39.95 inc VAT**



### MLB Antenna Mark I

Complete wire antenna including the MLB. 12.5 metres long. Frequency range 100kHz to 40MHz.....**£66.95 inc VAT**

### MLB Antenna Mark II

Similar to the MLB Mark I but 20 metres long for improved performance at medium and long wave.....**£76.95 inc VAT**

*Coming soon. The new DX-7 active aerial as described on Radio Netherlands this week. The answer to the flat dwellers' prayer.*

## STOP PRESS

At last in stock, the long-awaited T2FD low noise receiving aerial. Contact our sales desk at Matlock for full details.

**T2FD – £149.95 in VAT**

# FREE

Send four first class stamps to cover the postage and we will send you, by return, your FREE copy of 'THE LISTENERS GUIDE' (2nd edition); a commonsense look at radio listening on the LF, MF and HF bands. Its unique style will, I am sure, result in a 'good read'; but underneath the humour lies a wealth of experience and expertise. You will also receive detailed leaflets on our range of receivers and a copy of our current price list.

Access

VISA

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**LONDON (MIDDX):** 223/225 Field End Road, Eastcote Tel: 081-429 3256 **NEWCASTLE:** Newcastle International Airport Tel: 0661 860418

# Roberts R801 P

*Roberts have a tradition of producing high quality radios. The new R801 is a great receiver for beginners and travellers as it covers most of the f.m., medium and short wave bands in a very compact unit. What makes this radio a little more unusual is that there is an excellent digital display and is really easy to operate, as Jon Jones found out.*

One of the first points that struck me was the very clean lines of the R801. Rather than the usual square shape, it featured a smooth curve over the speaker section. Not only did this look good, but it but it improved the general handling. The display was also really good and featured large 12mm high characters - really quite unusual in a modern receiver, especially one in this price range. The only slight set-back was the lack of a backlight for night-time viewing.

Another useful addition was a small flap on the rear panel that enabled the R801 to sit at a handy 30° for table top use. This proved to be an ideal compromise between viewing angle for the display and operation of the front panel controls. Whilst on the subject of controls, I ought to mention the layout used on the R801. All the controls on the front panel were of the push button type and stood just proud of the panel. They all had a very positive click action leaving you in no doubt as to whether or not the button had been pressed. The one thing I liked was that it was really obvious what each button did, without the need to read the manual. That's very useful if you're not blessed with the patience of a saint (and I'm not) and like to try the radio first and worry about the instructions afterwards.

In addition to the push buttons, there were three slide switches and a slider volume control mounted around the top and side panels.

Incidentally, the power requirements of the R801 were met with four AA cells mounted in a conventional battery compartment. If you wanted to use an external 6V power source, this could be coupled using a standard coaxial power socket on the side panel.

## Tuning Around

The frequency range of the R801 was well chosen and covered all the important broadcast bands. The short wave coverage was unusual as it was split into only two bands. These covered 3.2-7.3MHz and 9.5-21.75MHz, which covers the eleven broadcast bands between 90 and 13m.

There are two ways to tune the R801 - manual and memory. In the manual tuning mode, buttons marked with up and down arrows were used to change frequency. Each press of the button was confirmed by a discrete beep that was just quiet enough not to drive you mad. As is common with this type of control, keeping a button depressed started a search facility that stopped when a signal above a pre-set threshold was encountered. This proved to be great, with the threshold set at just about the right level. I was able to find readable stations very quickly using this.

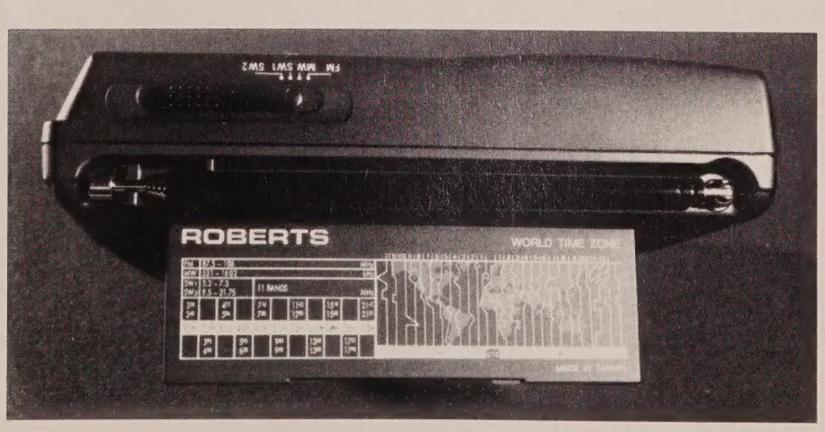
The tuning steps were well chosen and changed depending on the band in use. The medium wave used 9kHz steps while the short wave bands were covered with the standard 5kHz steps. On v.h.f. the steps changed to 50kHz, which is again standard practice on most receivers. Now, obviously, this means that monitoring stations not conforming to these channel spacings could be difficult, but as there are so many stations to choose from these days, I didn't find that a problem.

The provision of a digital frequency readout was a tremendous advantage when trying to identify stations in the busy short wave bands. This alone gives the R801 great appeal to the newcomer to short wave listening. It really helps to be able to go back, accurately, to any given frequency.

## Twenty Memories

One of the great advantages of a synthesised tuning system, is that it's easy for the manufacturer to include memories. The R801 features a total of 20 memories, which were very simple to use. The memories were split into four groups of five in line with the four bands (m.w., s.w.1, s.w.2 and f.m.). To make the programming and recall of the memories as straightforward as possible, they were seleceted using five numeric buttons on the front panel. This was very quick and convenient. Programming the memories was equally simple requiring the Memory Set button to be pressed before hitting the appropriate memory button.

One extra feature of the R801's memory system was that you could manually tune



# rtable Receiver

away from any memory setting without any additional button pressing. With many receivers you would have to switch out of the memory mode before you could use the manual tuning. I found this to be extremely useful when tuning around.

One way the memories could be used is to store the start of each broadcast band. Once selected, you could then manually tune to find the station of your choice. This might be a very quick way of moving around the bands.

Once you've selected a frequency you could change the display to show time rather than frequency. I thought this was a particularly good idea as a time display is far more appropriate for most listeners. I used this mode quite a lot when filling out the log as I was listening to stations.

Another handy extra was a lock switch that was mounted on the side panel. When operated, this disabled all the front panel controls so preventing accidental frequency changes. How many times have you moved the radio to get a better signal, only to find you have knocked it off tune at the same time?

One of the problems facing the v.h.f. DXer is the additional noise experienced when attempting to receive weak stereo signals. One solution is to try switching to mono reception. The R801 had a front panel push button that toggles between mono and stereo reception. Of course you could only actually hear stereo through stereo headphones plugged into the 3.5mm phones jack on the side panel. You do get a small light-weight pair of earphones/ earpieces with the radio, which look a little strange, but work remarkably well.

## Fine Performance

As you've probably already gathered I was impressed by the general features of the R801. Just to prove my views I carried out a few tests in a borrowed test lab.

One area that effects the inteligibilty of signals is the distortion levels. It's also an area that few people consider when comparing specifications. The R801 confirmed my impression of good quality with excellent distortion figures. The a.m. distortion measured just 0.5% while the worst v.h.f. performance was just 1%. This was really very good for a receiver of this type and are figures you should look for in the spec of any portable radio you are considering.

I didn't attempt a sensitivity measurement as this is difficult to achieve with any accuracy on receivers with internal antennas. However, my subjective impression was that the sensitivity was well up to that required of a broadcast receiver. In the time I was playing with the radio I found I could pull in a wide variety of signals, and I don't think that conditions were particularly brilliant at the time.

To give you an idea of some of the things I heard (mainly whilst waiting for my dinner to appear!), I listened to a very interesting programme on the *History of Communism in Australia* on 9.540MHz at around about 1850UTC on August 26! At around 1907UTC on the same evening I listened to the news, in French, from Radio Eco on 5.095MHz and finally there was a progamme, again in French, about the Vietnamese Boat People on RSI on 9.535MHz. Whilst I'm well aware that these don't rate as amazing DX, I prefer to be able to find something interesting and stick with it, rather than jump around all over the bands looking for idents.

## Alarm Clock

In addition to all the standard radio features, the R801 included a useful clock and alarm system. The most obvious use is to wake you up in the morning. For this you

had two choices of alarm signal, either a beep plus radio or just radio. There was also a handy sleep facility that could be used to give you an hour of your favourite station as you drifted off to sleep.

### Summary

I must admit to being very impressed with this very neat and compact receiver. The features were extremely well thoughout and all operated in a logical manner. The display was certainly a very strong point and of the best I've encountered in a long while.

The R801 currently costs £79.99 and can be obtained from any Roberts outlet. If you can't find out who your local Roberts dealer is, then drop the Editorial Office a line as they have a list of all the dealers. My thanks to Roberts for the loan of the review model.

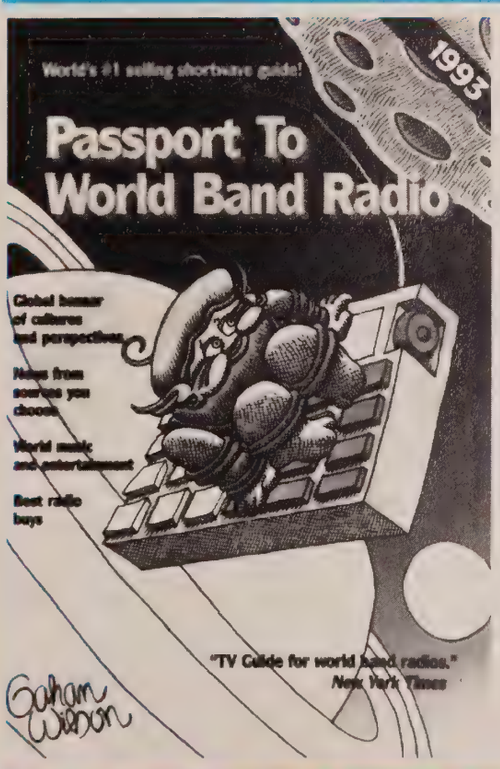
### Specification

| | | |
|---|---|---|
| Frequency Range | m.w. | 531-1602kHz |
| | s.w. 1 | 3.2-7.3MHz |
| | s.w. 2 | 9.5-21.75MHz |
| | f.m. | 87.5-108MHz (Stereo) |
| Power Source | 4 x AA cells | |
| | 6V d.c. adaptor at 300mA | |
| Size | 110 x 170 x 37mm | |

### Abbreviations

| | |
|---|---|
| % | per cent |
| a.m. | amplitude modulation |
| d.c. | direct current |
| DX | 'long distance' |
| f.m. | frequency modulation |
| kHz | kilohertz |
| l.w. | long wave |
| m | metres |
| m.w. | medium wave |
| mA | milliamperes |
| MHz | megahertz |
| mm | millimetres |
| s.w. | short wave |
| UTC | Universal Co-ordinated Time (=GMT) |
| V | volts |
| v.h.f. | very high frequency |
| ° | degrees |


# Hot Off The Press




The cover of the new 1993 edition of *Passport to World Band Radio* proudly proclaims that it is the 'World's #1 selling shortwave guide!' It certainly is one of the more popular books in the *Short Wave Magazine* Book Service and is eagerly awaited each year by a growing number of followers.
Inside its covers you will find details of the world's radio stations listed by country in alphabetical order. The entries offer interesting notes, where applicable, local times, toll-free telephone numbers, free gifts, goodies, contacts, postage requirements and fax numbers. An interesting entry is under DISESTABLISHMENTARIAN AND CLANDESTINE - self-evident as to what is covered, but nevertheless, an interesting section.

Other sections give worldwide broadcasts in English, again by country with schedules, 'What's On Tonight?' is a sort of *Radio Times* of the short waves, 'Ten of the Best' offers a run-down on the top short wave shows for 1993, while 'See the World Tonight' gives the low-down on press fax stations.

Then there is the '1993 Buyer's Guide to World Band Radio', a comprehensive listing of radios with advice on choosing a suitable set, what to put in your car, portables and tabletop sets.

*Passport to World Band Radio* , of course, has a 'Channel-by-Channel Guide to World Band Schedules' - otherwise known as 'The Blue Pages' - giving you rapid access to stations, times, languages and target areas in ascending frequency order.

***This is one reference book that should be beside your short wave radio, not on your bookshelves!***

**For a limited period *Passport to World Band Radio* is on special offer, costing only £11.50 including P&P, a saving of £4.00 on the normal price of £14.50 plus £1.00 P&P. See page 70 for ordering information.**

# South Midlands Communications Ltd

**Southampton** (0703) 255111 **Leeds** (0532) 350606 **Chesterfield** (0246) 453340
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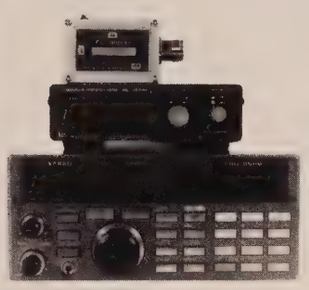
# LISTEN OUT at SMC

***When you want more from your receivers, just look to Yaesu. We take your listening seriously.***



*Yaesu's serious about giving you better ways to tune in to the world around you. And whether it's for local action or world-wide DX, you'll find our HF/VHF/UHF receivers are the superior match for all your listening needs.*

**FRG9600**

The **FRG9600,** a premium scanning receiver covering 60-905MHz, SSB, CW, AM & FM modes. 99 memories. 5, 10, 12.5, 25 & 100kHz scanning steps. Keyboard frequency entry. Optional convertors to extend range from 0.15-30MHz and 800-1300MHz

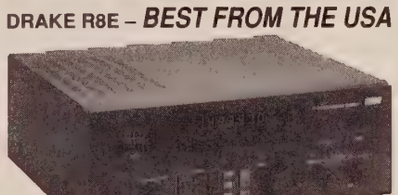
**FRG8800 – *A BETTER WAY TO LISTEN***

The **FRG8800** HF communications receiver. A better way to listen to the world. Continuous coverage from 0.15-30MHz optional module for VHF coverage from 118 to 174MHz. SSB, CW, AM & FM modes. Direct frequency entry keyboard.

**JRC NRD535 – *THE ROLLS ROYCE OF RECEIVERS***

The new NRD535 epitomises the very best in communications receiver design. This high technology product is based on the abundant technical experience gained by JRC in the professional communications receivers field. This means that the NRD535 is arguably one of the best receivers available to meet the discerning listeners needs. Brief specifications are as as follows. Frequency coverage: 0.1-30MHz; Operating modes: CW, SSB (LSB & USB), AM, FM, FSK & RTTY; Supply voltage: 240V A.C. or 13.8V D.C. ECSS, BWC & RTTY units available as options.

**DRAKE R8E – *BEST FROM THE USA***



Now available from SMC the new DRAKE R8E communications receiver. These receivers utilise the very latest in technology to meet the demanding requirements of today's listeners. Conveniently located front panel controls allow for rapid operator programming and ease of use. The R8E receiver covers 0.15-30MHz and with the optional VHF converter will also cover 35-55MHz and 108-174MHz. The large clear LCD display gives the operator full information about the current receiver status.

***THE MOST COMPREHENSIVE RANGE OF RECEIVERS AVAILABLE AT MOST BRANCHES***

YAESU
JRC
AOR
SONY
ICOM
KENWOOD
DRAKE
FAIRMATE
BEARCAT
LOWE
YUPITERU

SMC are pleased to be able to offer the SONY range of Multiband Receivers. They feature all the latest technology allowing unequelled coverage of both broadcast and shortwave bands, yet remaining both compact and easy to use. All the models illustrated cover VHF broadcast, SW broadcast, and some models cover other bands as well The very latest model available from SONY is the ICF-SW77. This receiver covers LW, MW, SW and FM stereo broadcast bands and has SSB reception on the SW bands. A comprehensive keypad and LCD display give easy control over the massive array of features available. Other SONY products available include the minuscule ICF-SW1, the versatile ICF-SW7600, the popular ICF-2001D and for airband enthusiasts the AIR7 and ICF-PRO80.

**ICF-SW77**

**AIR 7**

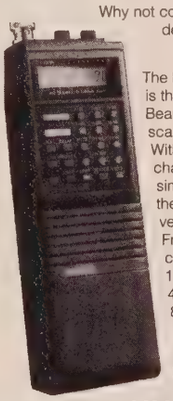
## AOR

SMC are pleased to be able to offer a large number of models from the very comprehensive AOR range which includes both hand portables and mobiles/base stations.
All the receivers are built to the highest possible specification yet remain very competitively priced. Often the leaders in the field, the AOR range is proving very popular amongst both professional and non professional users.
The top of the range model must be the AR3000 which covers 100kHz–2036MHz without any gaps. The sensational AR1500 is already a best seller, it's easy to understand why! With coverage from 500kHz – 1300MHz and complete with SSB. Try one today you'll see why they are a best seller. Last but not least is the AR2000 which is an extremely flexible handheld scanner covering 500kHz–1300MHz.
Why not contact us today for more details of the AOR range.

**AR3000**

BEST SELLER

**AR1500**



The Bearcat 200XLT is the cream of the Bearcat handheld scanner range. With 200 memory channels and simple operation these are proving very popular. Frequency coverage 66-88, 118-174, 406-512 and 806-956MHz.

**200XLT**

The compact HX850E is a basic scanner with a few memories. Ideally, suitable for a novice in the scanner market. AM/FM modes and a frequency coverage of 60-89, 118-136, 140-174 and 406-495MHz.

**HX850E**

**** UNBEATABLE VALUE ****

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- *Free Finance on selected items, subject to status. Details available on request.*
- *Up to £1000 instant credit, a quotation in writing is available on request, subject to status.*
- *Yaesu Distributor Warranty, 12 months parts and labour.*
- *Carriage charged on all items as indicated or by quotation.*
- *Prices and availability subject to change without prior notice.*
- *Same day despatch wherever possible.*

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*Leeds LS9 6JE*
*9am–5.30pm Mon-Fri*
*9am–1pm Sat*

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*New Whittington*
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*9.30am–5.30pm*
*Tues–Sat*

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*Alum Rock*
*Birmingham B8 3HX*
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*9am–4pm Sat*

***Axminster*** *(0297) 34918*
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*West Street*
*Axminster*
*Devon EX13 5NY*
*9am–5.20pm Tues–Sat*

# grassroots

**Club Secretaries:**
Send all details of your club's up-and-coming events to: Lorna Mower, Short Wave Magazine, Enefco House, The Quay, Poole, Dorset BH15 1PP. Please tell us your County and keep the details as brief as possible.

## rallies

***October 23/24**: The 21st Annual Leicester Amateur Radio Exhibition will be held at the Granby Halls, Leicester. Doors open at 10am each day (9.30am for the disabled). All the usual facilities. Frank G4PDZ. Tel: (0533) 553293 business hours or (0533) 871086.

***October 31/November 1**: The Sixth North Wales Radio & Electronics Show will be held at the Aberconwy Conference & Exhibition Centre, Llandudno.

**November 8**: The annual Donegal (Tir Conaill) Amateur Radio Mobile Rally and Junk Sale will be held at Jacksons Hotel, Ballybofey, Co. Donegal. Doors open 12 noon. There will be the usual trade stands, Bring & Buy and refreshments available. Proceeds in aid of the GB3WT and EI7CS repeaters. **Ken McDermot. Tel: 074 31109**.

**November 8**: The 2nd Barnsley Amateur Radio Rally will be held in the Willowgarth Senior High School, Brierley Road, Grimethorpe, Barnsley. There will be a large Bring & Buy, a good selection of traders, a licensed bar, catering and free car parking for over 1500 cars. Doors open 11am (10.30am for the disabled). Please note that due to restoration work, the rally will not be suitable for wheelchair users. If a wheelchair user wishes further information, please do not hesitate to contact Ernie. **Ernie G4LUE. Tel: (0226) 716339** between 6 and 8pm.

***November 15**: The Bridgend & District ARC are holding their rally at the Bridgend Recreation Centre. Doors open 11am, 10.30 for wheelchair operators. There will be a Bring & Buy, canteen and large bar/rest room. The swimming pool is available for the family as is the rest of the Recreation Centre. **Charles Sedgebeer. Tel: (0656) 860434**.

**November 22**: The Bishop Auckland Radio & Computer Rally will be held in the Spennymoor Leisure Centre. **Mike Shield. Tel: (0388) 766264**.

**November 28**: The Greater London Amateur Radio & Computer Show will be held at Harrow Leisure Centre, Christchurch Avenue, Harrow, Middlesex. Doors open from 10.30am to 4.30pm. **CLPK. 18 Litchfield Close, Clacton-on-Sea, Essex CO15 3SZ**.

If you're travelling **long** distances to rallies, it could be worth 'phoning the contact number before setting off to check all is well.

* Short Wave MAgazine & Practical Wireless in attendance

### AVON

**RSGB City of Bristol Group**: Last Mondays, 7pm. The Small Lecture Theatre, Queens Building, University of Bristol, University Walk, Bristol. November 30 - Construction Evening. Dave Coxon G0GHM. (0275) 855123.

### BERKSHIRE

**Reading & DARC**: 2nd & 4th Thursdays, 8pm. The Woodley Pavilion, Woodford Park, Haddon Drive, Woodley, Reading. November 26 - Construction Contest. Nick Challacombe. (0734) 722489.

### DERBYSHIRE

**Derby & DARS**. Wednesdays, 7.30pm. 119 Green Lane, Derby. November 4 - Junk Sale. Richard Buckby. Ambergate 852475.

**South Normanton & Alfreton DARC**: Mondays, 8pm. New Street Community Centre, New Street, South Normanton. November 2 - Natter Night, 9th - Night on the Air, 16th - AMTOR by 2E0AAL, 23rd - GB3DY by G3ZYC, 30th - Visit to Nottingham's BBC radio & TV studios.

### DEVON

**Torbay ARS**: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. Walt G3HTX. (0803) 526762.

### EAST SUSSEX

**Hastings E&RC**: 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. Fridays, 8.30pm. Ashdown Farm Community, Downey Close, Hastings. November 18 - Basic Metal Work for Amateurs. Reg Kemp. 7 Forewood Rise, Crowhurst.

### GREATER LONDON

**Acton, Brentford & Chiswick RC**: 3rd Tuesdays, 7.30pm. Chiswick Town Hall, Heathfield Terrace, Chiswick, W4. November 17 - Members' Reminiscences of Hamming. Colm Mulvany G0JRY. Tel: 081-749 9972.

**Edgware & DRS**: 8pm. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. November 12 - Gas Turbines Revealed by G4IUZ. Hank Kay G0FAB. (081-205 1023).

### HAMPSHIRE

**Three Counties RC**: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. November 4 - New on the Air, BBC Radio Surrey, 18th - Trip to the Dayton Hamvention by G3XFD. Kevin G8GOS. (0420) 83091.

### HEREFORD & WORCESTER

**Bromsgrove & DARC**: Fridays. Avoncroft Arts Centre, South Bromsgrove, Worcester. Joe Poole. (0562) 710010

### HERTFORDSHIRE

**Dacorum AR & TS**: 1st (informal) & 3rd (formal) Tuesdays, 8pm. The Heath Park, Cotterells, Hemel Hempstead. November 17 - Antenna Design by G0NJI. Dennis Boast. (0442) 259620.

### HUMBERSIDE

**Goole R & ES**: Most Fridays, 7.30pm. West Park Pavilion, off Airmyn Road, Goole. Last Fridays. The Black Swan Inn, Asselby. November 6 - G0OLE On Air Night, 13th - Contests by G0GLZ, 20th - Whose Rig is it Anyway? Quiz, 27th - Social Evening in the Black Swan Inn. Steve Price. (0405) 769130.

### KENT

**Bromley & DARS**: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. November 17 - /Mobile to Turkey by Tony Swainsbury. Geoffrey Milne. 081-462 2689.

**Maidstone YMCA ARS**: Alternate Thursdays. YMCA Sports Centre, Melrose Close, Maidstone, Kent. November 6 & 20th - RAE, 13th - Construction Competition. C.L. Roberts. (0622) 670936.

**Sevenoaks & DARS**: Sevenoaks DC, Council Offices, Argyle Road, Sevenoaks. November 16 - Fact, Fallacy & Foible by Jack Brown.

### LANCASHIRE

**Preston ARS**: Alternate Thursdays. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood. November 12 - QRP Radio Construction by G3RJV, 26th - Look At Lancashire by Mr Green . Eric Eastwood G1WCQ. (0772) 686708.

### MERSEYSIDE

**Wirral ARS**: 1st & 3rd Wednesdays, 7.45pm. Ivy Farm, Arrowe Park Road, Birkenhead, Wirral. November 4 - Chairman's Night.

### NORFOLK

**Dereham ARC**: 8pm. St Johns Ambulance Hall, Yaxham Road, Dereham. November 12 - Propagation by G3YLA. Mark Taylor G0LGJ. (0362) 691099.

**Norfolk ARC**: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. November 4 - Real Radio Evening, 11th - RAYNET Snow Report by G1LZQ, 15th - Surplus Equipment Auction and Bring & Buy, 18th - PCBs Made Easy, Bring Your Designs for an Etch-in, 25th - Informal. Jack Simpson G3NJQ. (0603) 747992.

### NOTTINGHAMSHIRE

**Mansfield ARS**: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. November 5 - RSGB HF Contests by G3SJJ. Mary G0NZA. (0623) 755288.

**ARC of Nottingham**: Thursdays, 7.30pm. Sherwood Community Centre, Mansfield Road, Nottingham. November 5 - Forum, 12th - Very Early Radio by G4NZU, 19th - Activity/Construction/WAB, 26th - Standard Frequency/Time Signals by G6ABU. Rex Beastall. (0602) 733740.

**South Notts ARC**: Fridays, 7pm. Highbank Community Centre or Fairham Community College, Farnborough Road, Clifton Estate, Nottingham. November 6 - Open Forum, 13th - RIS, 20th - Contruction (Fairham College), 27th - On Air. Ray G7ENK. (0602) 841940.

### OXFORDSHIRE

**Oxford & DARS**: 2nd & 4th Thursdays, 7.45pm. British Legion CLub, Haddow Road, Crotch Crescent, Marston Road, Oxford. November 26 - Electronic Warfare by G3RZP. Terry Hastings. (0865) 863526.

### SOUTH YORKSHIRE

**Barnsley & DARC**: Mondays, 7.15pm. Darton Hotel, Station Road, Darton, Barnsley. November 2 - Rally Briefing, 9th - Talk by George Dobbs, 16th - QRP by George Dobbs, 23rd - Construction Competition, 30th - On the Air Night. Ernie G4LUE. (0226) 716339.

### STRATHCLYDE

**West of Scotland ARS**: Fridays, 8pm. Garnethill Multi-Cultural Centre, Rose Street (Off Suchiehall Street), Glasgow. November 6 - Does RAYNET Have a Role to Play in Today's Modern Communications?, 20th - Scottish Nuclear Talkabout. Jack Hood GM4COX. (0698) 350926.

### WARWICKSHIRE

**Stratford upon Avon & DARS**: 7.30pm. The Home Guard Club, Main Road, Tiddington, Stratford-upon-Avon. November 9 - DX from Clipperton Is by G0LMX, 23rd - Intelligent DXing, Knowing What, When and How by G3PJT. A. Beasley G0CXJ. 060-882 495.

### WEST MIDLANDS

**Midland ARS**: 3rd Tuesdays, 7.30pm. Headquarters Unit 22, 60 Regent Place, Birmingham B1 3NJ. November 8 MARS Stockland Rally, 27th - Atari Night, 30th-Computer Night. John Crane G0LAI. 021-628 7632 (evenings).

### YORKSHIRE

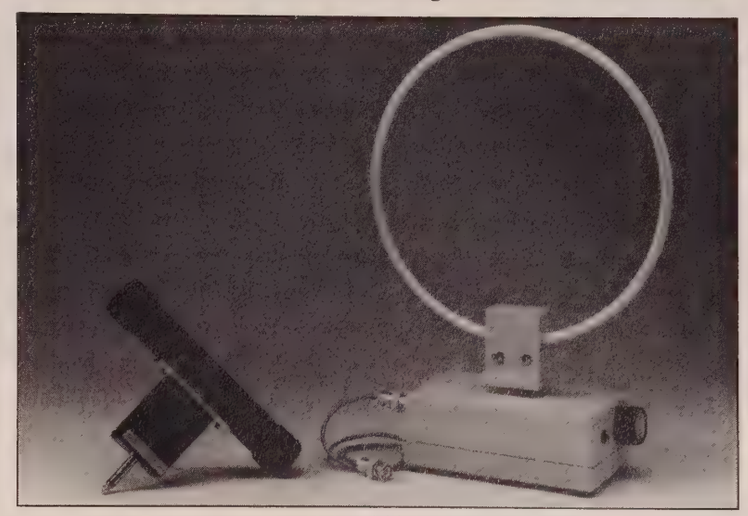
**Bridlington & DARS**: Alternate Thursdays, 7.30pm. Combined Cadet Building, Bridlington Upper School, Bessingby Road, Bridlington. November 12 - Cadet Radio, 26th - QRP.

# AOR ~ AERIAL VIEW

A range of aerials are now available from AOR with coverage from
Low Frequencies ~ Upper UHF in portable, set-top, base and mobile configurations:

The **LA320** is an ultra-compact active loop aerial specifically designed to provide reception when located indoors. Coverage is from 1.6 ~ 15 MHz with **optional elements** available for 0.2 ~ 0.54 MHz and 0.54 ~ 1.6 MHz. The aerial elements may be rotated in order to achieve maximum receive signal strength while minimising (nulling out) the effects of unwanted interfering local terrestrial signals. The vari-cap tuning featured in the LA320 also adds valuable selectivity to your receiver's front end stages. Ideal for Hotel room use while travelling etc.

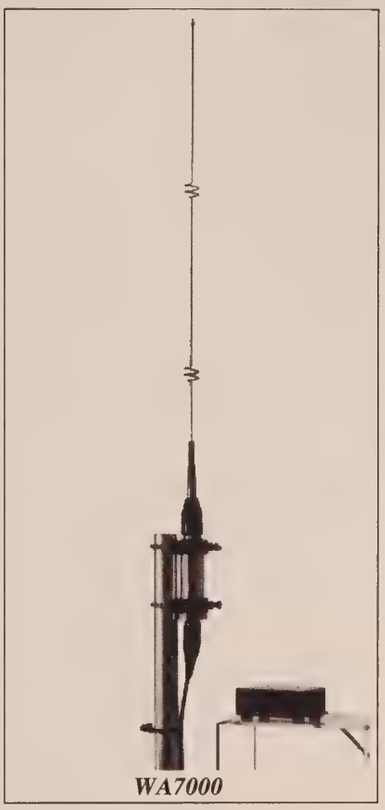
**LA320 £99.00 inc. VAT**
**320L Element 0.2 ~ 0.54 MHz £21.90 inc. VAT**
**320M Element 0.54 ~ 1.6 MHz £21.90 inc. VAT**



*LA320*

The **WA7000** is a new ultra-wide range external receiving aerial designed for areas where space is a problem and provides coverage from VLF ~ SHF. A MOS power FET amplifier is utilised on the lower bands to provide superior performance in the HF 30 kHz ~ 30 MHz range, the useable coverage of the aerial being 30 kHz ~ 2 GHz. The top whip has loading coils tuned around 150 & 800 MHz to enhance performance of the VHF & UHF bands where the aerial is passive. The aerial is very compact being just under 800mm in total height. Approximately 15m of terminated coaxial cable is provided ready to plug in and start using. The aerial is powered by 12V DC @ 100mA (mains power supply provided), this being fed up the coaxial cable. A small interface box is included for connection to the power supply, this is fitted with a BNC patch lead ready to plug into the AR3000A or similar receiver. 'V' bolts and clamps are included to ease installation however a small additional support pole will be required.

**WA7000 £120.00 inc. VAT**

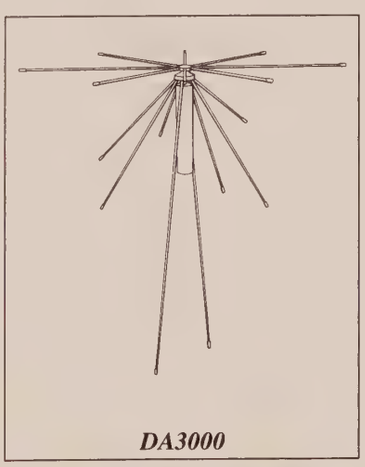


*WA7000*

The **MA500** is a wide band VHF ~ UHF mobile whip aerial mounted on a magnetic base. Useable coverage is 25 MHz ~ 1300 MHz with the loaded whip element being peaked around 150 & 800 MHz. The magnetic base has a diameter of about 85mm and the magnetic attraction is very strong.
The aerial is mounted on a PL259 plug ready to screw onto the magnetic base's SO239 socket. Approximately 4m of high quality RG58/U 50 OHM coaxial cable is provided which is fixed into the magnetic base at one end and terminates into a BNC plug at the other ready to plug into most AOR receivers (and most other brands). The total height of the aerial including the base is approximately 720 mm.

**MA500 £44.95 inc. VAT**

*MA500*



*DA3000*

**DA900** Very popular wide band VHF ~ UHF loaded set-top flexible whip with a BNC connection, as supplied with the AR2000. Length approximately 245mm. **£9.85 plus £1.50 P&P inc. VAT.**
**RA2001** Telescopic VHF ~ UHF whip on a right-angle BNC plug, length approximately 700mm. As supplied with the AR3000A. **£11.40 plus £1.50 P&P inc. VAT.**
**SW-Wire** 5m aerial wire for shortwave listening, terminated in a BNC plug. As supplied with the AR1500 but suitable for many receivers. **£5.76 plus £1.50 P&P inc. VAT.**

The **DA3000** is a well designed 16 element wide band discone aerial for external mounting. It offers an exceptionally wide frequency coverage from 25 MHz ~ 2 GHz. The 16 elements are made of Stainless-Steel to reduce the effects of weathering. The aluminium support mast is 300mm in length, 'V' bolts and clamps are provided however a small additional support pole will be required. The aerial termination is protected from rain etc. by careful design, the high quality TNC connector is concealed within the support mast. The DA3000 stands approximately 1040mm high and the radius is approximately 450mm, the weight is 1.1 kg.

***Chris Lorek's conclusions from a recent review...***
***"It provided a good performance across a wide frequency range"...***
***"I'd certainly recommend it"...***
**DA3000 £69.00 inc. VAT**

Access VISA

**AOR (UK) Ltd.**
Room 2, Adam Bede High Tech Centre,
Derby Road, Wirksworth, Derbys. DE4 4BG.
**Tel: 0629 - 825926 Fax: 0629 - 825927**
A subsidiary of AOR Ltd Japan E&OE

# SWM CH

## *Need a great idea for a Christmas present?*

## *A SWM gift subscription is the answer!*

Give your loved-one, your best friend or a radio enthusiast you know a subscription to your favourite magazine this Christmas.

Order a subscription to *Short Wave Magazine* now and we will send a Christmas card telling them that their present from you will be their own personal copy of *Short Wave Magazine* delivered by the postman every month next year.

They also get free membership of the *SWM* Subscribers' Club (see page 34) and a Discount Voucher, valid until the end of 1993, giving them 15% off of their first *SWM* Book Service order over £20 in value.

Fill in the form on this page and send it to: *SWM* Christmas Subscription Offer, FREEPOST PW Publishing Ltd., Enefco House, The Quay, Poole, Dorset BH15 1PP.

All UK orders received by 9 December will be dispatched in time for Christmas. Remember, overseas orders take longer to reach their destination.

**To: PW Publishing Ltd., FREEPOST, Enefco House, The Quay, Poole, Dorset BH15 1PP. Credit Card orders taken on (0202) 665524**

**SHORT WAVE MAGAZINE 1 YEAR SUBSCRIPTION RATES**

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- ❑ £23.00 (Europe)
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Please send a one year subscription to *Short Wave Magazine*, starting with the January 1993 issue to:

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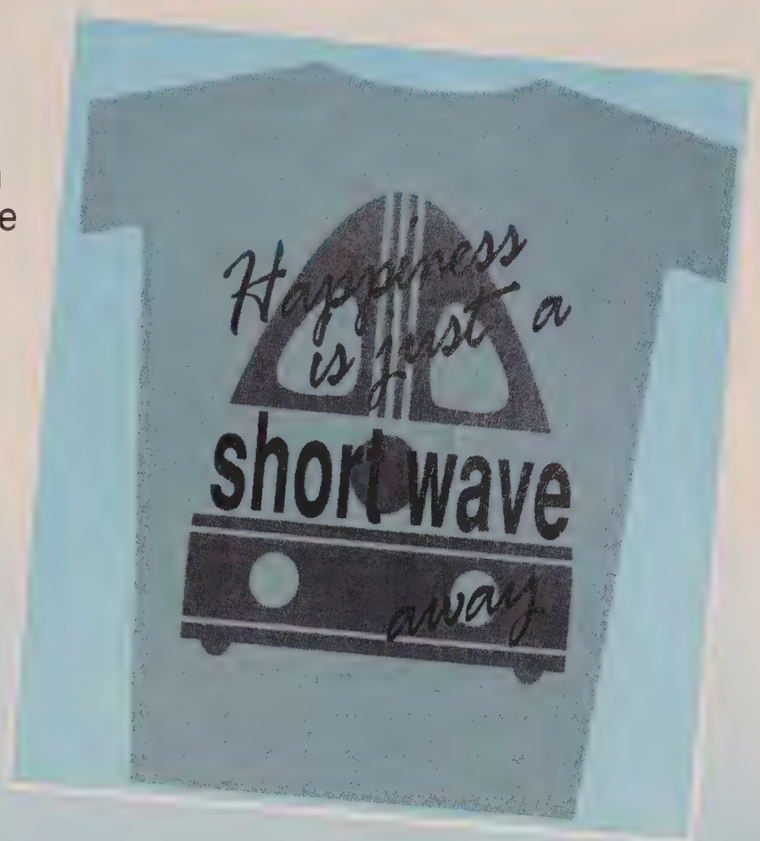
# RISTMAS IDEAS

## *Short Wave Tee-shirt Offer*

### *£6.99 inc P&P.*




Show the world that short wave listening brings happiness by wearing the exclusive *Short Wave Magazine* tee-shirt.

An ideal Christmas present for you, or a loved-one - the XXL size makes an excellent nightshirt for the ladies! Solve all your Christmas present worries in one go by shopping with *Short Wave Magazine*.

All UK orders received by 9 December will be dispatched in time for Christmas.

Remember, overseas orders take longer to reach their destination.

The *SWM* Tee-shirt is available in XL and XXL sizes and is a quality, white cotton shirt with the two colour design on the front.

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**To: *Short Wave Magazine* Special Offer (November)**
**FREEPOST, Enefco House, The Quay, Poole, Dorset BH15 1PP**
**Please send me ..... XL Tee-shirt(s) @ £6.99 inc P&P.**
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Complete **both** coupons, **in ink**, giving your **name and address clearly** in **block capitals**.
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If you wish to pay by credit card (Access, Mastercard, Eurocard or Visa only), please fill in your card details and sign the coupon where indicated.
Offer only available to readers of *SWM* in England, Scotland, Wales, N. Ireland, the Channel Islands, the Isle of Man and BFPO addresses. Orders are normally despatched within 28 days, but please allow time for carriage.
The closing date for this offer is 18th December 1992

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PW Publishing Ltd., Poole, Dorset
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# NEVADA EVERYT

## YUPITERU

**MVT 7000 HANDHELD**

★ Receives 8 to 1300 MHz 100kHz-1300MHz (at reduced sensitivity)
★ 200 Memory channels
★ Rotary or keypad freq. control
★ AM/FM/NFM
★ Large display with signal strength .....me

EACH SET IS SUPPLIED COMPLETE WITH:- Full set of high power NiCads, AC charger, DC power lead and carry strap.....**£319**

**MVT 8000 MOBILE/BASE**

This new model is the mobile version of the popular MVT 7000 Handheld above.
★ Receives 8 to 1300MHz, 100kHz to 1300MHz (at reduced sensitivity)

THIS RADIO IS ESPECIALLY SENSITIVE AT UHF FREQS. Set is supplied with mains power unit. .....**£349**

**MVT 6000 MOBILE/BASE**

An economy version of the new MVT 8000 above -housed in the same case.
★ Receives 25-550MHz, 800-1300MHz
★ 100 Memory channels

**SPECIAL PRICE**.....**£199**

## AIRBAND RADIOS

This month we are pleased to introduce **THE WORLDS FIRST DEDICATED CIVIL/MILITARY AIRBAND RECEIVER, THE VT225.**

A powerful pocket scanner that leaves the competition standing. - A super sensitive set designed for optimum performance on the Civil/MilitaryAirbands.
★ Receives 108-142 MHz Civil Airband 222-391MHz Military Airband 149.5-160MHz Marine Band
★ 100 Memory channels
★ AM/FM on VHF
★ Priority channel function

**EACH SET IS SUPPLIED COMPLETE WITH:-** NiCads, earphone, carrying strap and mains charger .....**£249**

**VT-125 UK CIVIL AIRBAND RECEIVER**

Using the same technology as the VT-225, this set covers the full Civil Airband - hearing distant signals that are inaudible on some other scanners.
★ Covers 108-142MHz
★ 30 Direct entry memories
★ Search steps 25, 50, 100kHz SUPPLIED COMPLETE WITH NICADS AND UK CHARGER.....**£169**

**VT-150 MARINE BAND SCANNER**

★ Covers 142-170MHz
★ 30 Memories
★ Steps 10-12.5-25MHz
★ 12V Cigar charger/supply lead

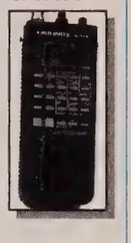
COMPLETE WITH NICADS AND UK CHARGER .....**£169**

## FAIRMATE

**HP2000**

STILL ONE OF THE MOST POPULAR HANDHELD SCANNERS ON THE MARKET.

Over the last year the HP2000 has outsold almost all other models.



★ Continuous coverage from 500kHz to 1300MHz
★ 1000 channels of memory
★ Keypad or rotary control
★ AM, FM and WIDE FM modes
★ Search steps from 5 to 995kHz

**EVERY SET COMES COMPLETE WITH:-** Full set of high power NiCads, 2 antennas, carrying case, earphone, DC cable, belt clip and strap, UK charger .....**£279**

## AOR SCANNERS

**AR1500 HANDHELD**

Covers 500kHz to 1300MHz receiving NFM, WFM, AM, and SSB. Supplied with a large selection of accessories including:-
★ Charger
★ Dry cell battery case
★ 5 mtr LW antenna
★ Ear piece
★ Soft case

**NOW IN STOCK**.....**£299**

**AR2002 BASE/MOBILE**

Receives 25 - 550MHz, 800 - 1300MHz, AM, FM, WFM Super-sensitive receiver.....**£399**

**AR2500 BASE/MOBILE**

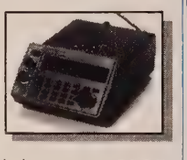
Receives 5-550MHz, 800-1300MHz AM, NBFM, WFM.1984 Memory Channels, Fast 36 CH/SEC Scan. Resolves SSB with BFO control .....**£399**

**AR2800**

★ Receives 500kHz - 600MHz, 800 - 1300MHz AM, FM, WFM. SSB capability with BFO.
★ 1000 Memory.....**£395**

**AR3000A**

NEW MULTIMODE SCANNER.....**£765**



★ Receives 100kHz - 2036MHz. Modes:- USB, LSB, CW, AM, FM, WFM.

Acepac 3 software now available, for use with IBM PCs and clones. .....**£119**

**INTRODUCTORY OFFER**

SUPPLIED WITH FREE WIDEBAND DISCONE WORTH £49.95

**Note: This is a UK version from AOR and not a foreign grey import.**

## SCANNERS

**ALINCO DJ-X1**

HANDHELD SCANNER
★ Covers 500kHz to 130MHz
★ 100 Memories
★ AM/FM/WFM
★ 3 Scanning speeds

PLEASE NOTE:- ALINCO DO NOT INCLUDE BATTERIES AND CHARGER AT THIS PRICE. .....**£249**

**JAPANESE LOW LOSS CABLE**

Super low loss cable – essential for optimum performance with wideband UHF scanners and receivers. Tough weather resistant and very flexible. The cable is good for frequencies up to 3GHz.

Model 5D (8.1mm) .....56p per metre
Model 8D (11.1mm) .....£1.40 per metre
Model 10D (13.1mm) .....£1.99 per metre
'N' types for above cables .....£3.65

NOTE:– we recommend 5D for use with most scanners.

**BEARCAT 50XLT**

Popular beginners model!
★ 10 channel programmable
★ 66-88, 136-174, 406-512, MHz
★ Ni-Cad or dry battery powered
★ Ideal marine monitoring.....**£99.95**

**BEARCAT 100XLT**

Modelled on the ever-popular 200XLT but with only 100 channel memory capability and top frequency of 512MHz.....**£184.00**

**All President range backed up by full in-house servicing facilities.**

**BEARCAT 200XLT**

200XLT HANDHELD SCANNER

Still one of the easiest to use, and the most reliable scanners on the market, easy to program, sensitive receiver.
★ 200 memories
★ 66-88, 118-174, 406-512, 806-956MHz
★ UK charger/nicad pack supplied.....**£220.00**

**BEARCAT 760XLT**

A mobile/desktop version of the 200XLT above but with 100 memories. Supplied complete with mains adapter

**SPECIAL PRICE**.....**£194**

## SONY

As a Sony Shortwave Centre we stock the complete range of Sony Shortwave products - here is a selection of the popular models.

**ICF2001D**

A full coverage shortwave, VHF, and airband radio (150kHz to 136MHz). Receives AM,FM, and SSB .....**£299**

**SW77**

One of the new additions to the Sony range,the SW77 covers 150kHz to 30MHz plus76-108MHz. With a rotary tuning dial,125 scan memories, reception of AM, FM, USB, LSB, CW, tape record facility, this is a superb all rounder.....**£349**

**SW1E**

Pocket shortwave plus VHF radio supplied with headphones, case and shortwave guide. This model won't hurt your pocket.! .....**£149**

**SW7600**

One of Sony's most popular VHF and Shortwave radios, 76-108MHz FM,150kHz - 30MHz Shortwave receives AM, FM, SSB.....Well Rated.!.....**£149**

**AIR 7**

Very popular, sensitive Airband handheld radio - lovely audio quality & large easy to use key board .....**£229**

**NEW PORTABLE SONY SW55 MULTIBAND RADIO**

Technically the best that Sony have come up with yet! Stable enough for FAX, yet easy enough to tune on SSB.
A dual-conversion receiver with excellent results, the SW55 is a real winner.
★ 150kHz-30MHz, 76-108MHz, all mode inc. SSB
★ 125 multi-function memories inc. world time clock/alarm
★ 4-way digital tuning inc. scan/manual/direct access

How do they get it all in? – Call now or come and see for yourself! .**£249**

**AN1**

An external active antenna with built-in pre-amp, covers 150kHz - 30MHz. Fully portable with easy to mount fixing brackets.....**£57.95**

**AN3**

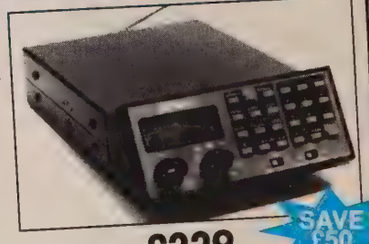
Active antenna for Aircraft and VHF reception, suitable for Sony Air 7 and others. .....**£54**

## THIS MONTH'S SPECIAL OFFER

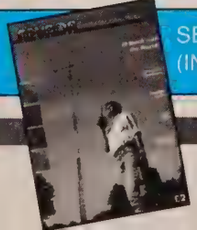
**NEVADA**

**MS1000 BASE/MOBILE SCANNER**

MOBILE VERSION OF THE HP2000 HANDHELD BUT WITH SEVERAL ADDITIONS:-
★ Switchable audio squelch
★ Tape recorder output socket
★ Automatic - signal operated tape recorder switching
★ All metal case for improved EMC compatibility
★ Receives:- 500kHz - 600MHz, 805 - 1300MHz. Supplied with mains power supply.



**£229** SAVE £50



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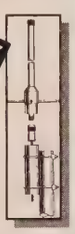

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New high quality wide band receiving antenna uses fibre glass/stainless steel, with 4 small radials. 'N' type connector. Length 1.1 metres .....**£39.95**

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Don't let its looks fool you – this is a top-class receiver direct from the States and a company known for its quality and reliability. 100kHz-30MHz supplied as standard (no hidden extras) with all filters and syncronas detector. Recent reviews agree – the performance of the R8E is second to none and still under £1000.00! Only .....**£995**

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Everything you wanted to know but were afraid to ask .....**£14.95**

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# First Aid

I am trying to find a manual for the Bearcat BC 20/20 FB and wonder if any *SWM* readers could help?

**Mr Wallace Smith, 15 Banks Crescent, Heysham, Morecambe, Lancs LA3 2SG.**

Can anyone help with the supplier of the following double-tuned 455kHz i.f. transformers for valve receivers, any make, of which I require two.

**Gerald Bramwell, 43 Beechfield Road, Manchester M27 1RA.**

Three weeks ago my home was broken into and my DR49 was taken, along with many other items. I can replace my TV and video, but I am having great difficulty in finding another DR49. Perhaps another reader can help me to replace my old friend, as I can't seem to locate one myself.

**Paul Vernon, 19 The Beeches, Sandwich Road, Eccles, Manchester M30 9DX.**

A few weeks ago we had some very bad weather, gale force at times, and this lasted for 2 or 3 days. During that time my Tatung TMR7602 went 'haywire'. It started switching from a.m. to f.m. and the digital read-out was jumping all over the place. I tried my receiver two or three times during the rough weather, but still the same so I gave it up as a bad job. After the weather cleared up I tired the set again and everything was fine. Anyone got any suggestions?

**Keith Tetlow, 7 Upton Walk, Ashton-under-Lyne, Lancs OL7 0TE.**

I have been a short wave listener for many years as well as a collector of valve operated receivers with a preference for communications receivers. One special receiver I wish to restore was manufactured by EMI Sales and Service Ltd, Type RR20. It covers 13, 16, 19, 25 and 31m as bandspread bands plus 9.5 to 3.2MHz and m.w. and l.w.

This receiver has a bit of history attached to it, as it was originally installed in the special White Train, which transported the Royal Family around South Africa during their three month visit in 1947. Any details, from a circuit diagram to a service manual are needed.

Also required are service details and circuits for a Hallicrafter models S38, S38D and S40. Next, does anyone know how to make the Icom IC740 receive out of band? Finally, my Philips D2999 has limitations and I would like to add a r.i.t. control to enable s.s.b. reception to be improved as well as scan other bands other than the broadcast ones.

**Neil Bousfield, 3 Willasdale Place, Bonnie Doon, East London 5241, South Africa.**

Despite only using a Saisho SW/2000X portable with a 40m wire, I can get brilliant f.m. airband reception and can often identify everything I hear.

One such station is a weather station called 'Scottish VOLMET' on a frequency of approximately 128MHz. It has an introduction of "This is Scottish VOLMET", before each 'round' of destination. The destinations, all nine of them are as follows: Aberdeen, Belfast, Edinburgh, Glasgow, Inverness, London (Heathrow), Prestwich. Stornoway, Sumburgh.

There are updates for each report every one and a half hours (1320, 1450, 1520, etc) with no gaps.

I would be grateful if readers of *SWM* could tell me a little more about this station. I would like to know more about the station. I would like to know its transmitting location, history or anything else.

**Alan Batty. 31 Brae Crescent, Mintlaw, Aberdeenshire AB42 8FD.**

As a fairly active s.w.l., I find myself doing a great deal of switching of antennas between various receivers to find the best answer for the situation at the time.

This involves the use of manual antenna switches (notoriously unreliable); plugs and sockets, etc. The answer is that often the signal has gone by the time you have switched over - my table is a mess of cables, etc., and I expect there is quite high insertion losses through the use of numerous plugs and sockets.

Presumably this can be done electronically, which could solve all these problems. So do any readers have any information/circuits on this. If so, I would be very grateful to obtain copies.

**J. Beardall G6ITY, 5 Meadow Walk, Great Abington, Cambridge CB1 6AZ.**

Please may I enlist the help of your readers to trace the following stolen amateur radio equipment.

Kenwood TS-430S No. 3090109 stolen from a parked car in Queensboroug Kent on the evening of 1/8/92. The equipment was owned by Martin Ouwehand PA3EHW who has returned home now after spending a few days with us here near York. Anyone seeing this equipment should inform the Sheerness Police, Tel: (0795) 584140 and should quote their crime reference BD8039-92

**Derek Cooper G8CUP**

Could anyone supply me with service manuals/circuit diagrams (or copies) for the following. Realistic receiver DX440, Sony receiver ICF-7600D, Heathkit DX40 transmitter.

Any costs will be re-imbursed

**John Wilkinson, 2 Parkgate Drive, Leyland, Lancs PR5 1BU.**


Printed circuit boards for *SWM* constructional projects are now available from the SWM PCB Service. The boards are made in 1.5mm glass-fibre and are fully tinned and drilled. All prices quoted in the table include Post and Packing and VAT for UK orders.

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*"Look out! Grandma's on the warpath. Grandad's crossed his weather FAX frequency with Tesco's electronic checkout again"*

## *Listen With Grandad*

*By Leon Balen and David Leverett*

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Wide range of mobile antennas also available

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| TNC320 HF + VHF TNC | £199.00 |
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| Data Engine High Performance TNC | £349.00 |

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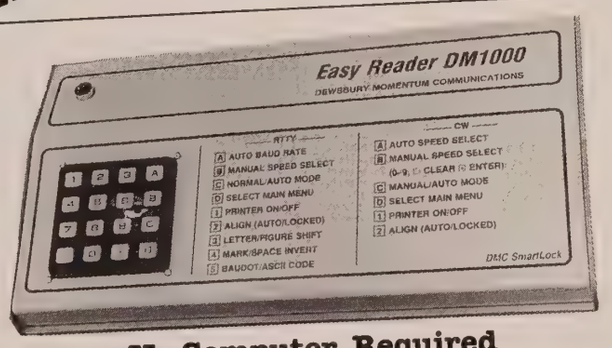


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Jeff Stanton G6XYU

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- Notch bandwidth adjustable
- Straight Through Position

***£89.95 carr. £4.00***

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**Specification:**

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| Antenna: | 50Ω BNC |
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| Configuration: | AM/FM Triple conversion |
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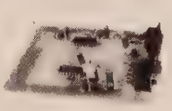

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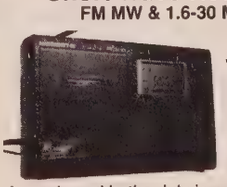

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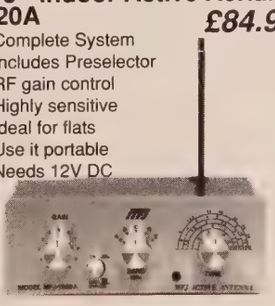

### Short Wave Confidential Frequency List

The eighth edition of the leading frequency manual for short wave listeners. Thousands of frequencies listed and all receivable in the UK. Full information regarding station names, times and modes are included plus much editorial. Don't confuse it with some cheap publications, this is professionally bound, runs to nearly 200 pages and is up to date! **£8.95 + £1.5 pp**

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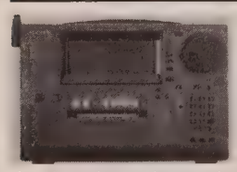

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**AN P1200**
Offset Parabolic antenna and frequency converter • Designed to augment the CRF-V21 • Capable of receiving fax broadcasts from meteorological satellites
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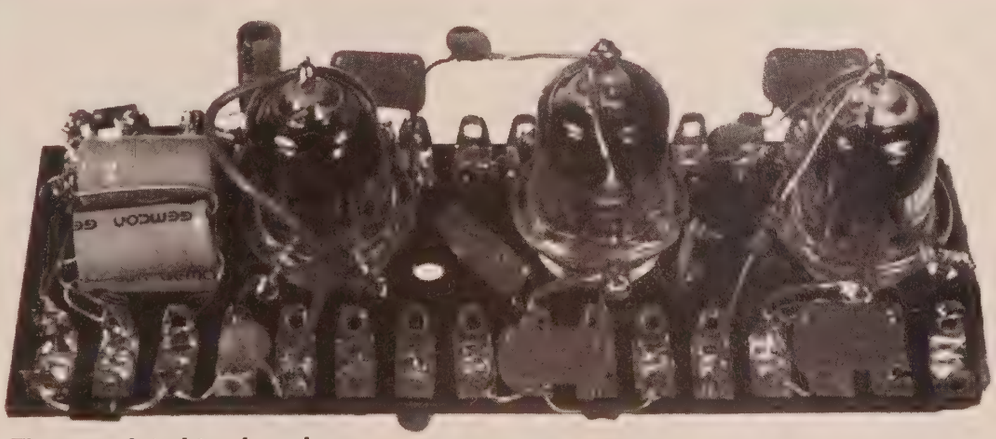
# A Simple Three-Valve Short Wave Receiver Part 2

Construction has been kept fairly straightforward, with no real attempt made to give the receiver a professional appearance. The style is generally in keeping with many of the designs found in magazines of the 50s and 60s. Although I personally prefer the 'open chassis' type of layout, in the interests of safety and appearance, I decided to house this receiver in a 'proper' case and full details of this will be given in a later part of this series. The fairly diminutive size of box chosen - for a valved radio - is appropriate when the small size of the Acorn valves and the other components used is considered. To dispense with the need to make an internal chassis to support some of the components, I adopted the slightly unorthodox method of fixing them to any spare 'real estate' on the inside of the case that I could find. This is how the coils ended up 'stuck to the floor' and the main circuit board with the valves 'hanging from the ceiling'. The circuit board, on which V1, 2 & 3 and the majority of components are mounted, is a tagboard having two rows of 18 tags. Only two rows of 16 tags are required, the last two pairs of tags needing to be cut off with a hacksaw to allow the tagboard to fit alongside T1. The tagboard is attached to the top of the case using two 20mm M3 nuts, bolts and 12.7mm pvc spacers. The three valves are mounted on the tagboard with their grid lead-outs (bottom of valve) pushed through the holes in the tagboard. Superglue can be used to hold the valves in place while soldering extension leads from the pins to the tagboard. Although these valves are designed to have connections soldered directly to the pins, they are still made of glass and so can crack if prolonged, localised heat is applied to the pins. The headphone socket and all the controls, with the exception of C6, the main tuning capacitor, are mounted directly on the front panel in the usual way.

The rear panel is drilled to accept a fuseholder, the mains lead strain relief grommet, an external speaker socket and the antenna and earth connectors. Ventilation is not, strictly speaking, needed as all the components run well within their ratings and hence cool. I have cut out a 'ventilation' hole on the prototype, which **just** happens to be directly adjacent to the three valves. There is a matching speaker for the receiver and an identical box has been used to build this. The speaker and radio can easily be unclipped. If desired, to make the radio more compact when using 'phones only. Slotted 'keyholes' are used to attach the two cabinets together. It is not advisable to use a loudspeaker or cabinet smaller than that specified, in the interests of obtaining maximum efficiency from the limited audio power available. The cabinets can be left in their aluminium 'birthday suits' and will look quite presentable or they can be painted. I sprayed the prototype using a Dupli-Colour car spray. Mine's *Ford Cosmos Blue* (Very posh!). This is one of the metallic colours which give a nice textured look and aren't too glossy.



***The completed tag board.***

### *A Word About Safety*

Although the 60V rail is unlikely to cause anyone lasting harm, - be careful though - there is mains voltage present in this receiver. Therefore, I strongly recommend that all bare connections carrying mains, i.e. the mains transformer, the mains switch and the fuseholder are properly sleeved. I used heatshrink sleeving to give a tight fit. Additionally a piece of card should be glued to the top of the mains transformer and bent over so that it completely covers the mains input area and similarly the fuseholder should be fitted with an insulating boot. The mains lead should be adequately insulated at the point of entry, preferably using a proper restraining grommet. Finally, should you elect to cut out a ventilation peep hole, ensure that if there is likely to be any 'inquisitive little fingers' about, they cannot be poked through any of the holes.

# UNIDEN 200 CHANNEL SCANNER

## £179.99 inc. VAT

### WHAT IT DOES

The Uniden High Performance Bearcat Radio Scanner allows you to pick up basically any radio broadcast that is made. At the same time it can be programmed to scan through channels that can be pre-programmed by yourself. The memory and backup memory in your scanner retain this information even if the main batteries are removed.

This means that as your scanner finds new frequencies that have activity they can be programmed into your scanner for immediate future access. A delay button on the scanner allows the unit time to wait for voice activity as it scans a full 200 channels in seconds. Priority button on the unit allows you to find a channel and reserve it so that as you scan other channels your unit keeps checking that important channel and keeps you tuned in to any information so that non is missed. A backlit LED display allows essential night viewing with an accurate LED display showing you the precise frequency you are on.

### HOW IT WORKS

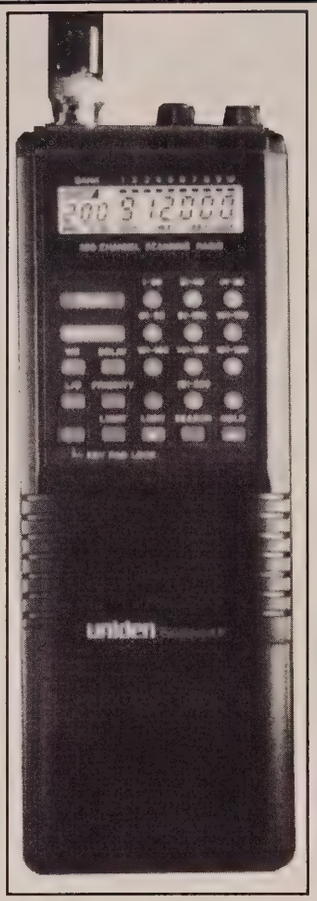
Your new Bearcat scanner can be used at the office, in your home in the car and will pick up signals from hundreds of miles away. It can also be taken on trips and is no larger than the smallest mobile phone. In fact for confidentiality it is made to resemble one. A small ear piece section allows you to have the unit positioned in your jacket and with the ear piece only yourself can hear the signals that you require to intercept.

### WHAT I SHOULD KNOW

Many channels that you have access to should not be programmed in by the user. Genlock Ltd. do not condone the use of the scanner to listen to the police, mobile telephones and cordless telephones. Using the device as a tool for commercial espionage is against the law. The list of people using the airways opposite can all be picked up and monitored. It may well be illegal to listen to some of the bands, check before scanning.

### RADIO SCANNER WARNING

Whilst the ownership of a radio scanner is not an offence, using the device to obtain information as to the sender, address content or message without prior consent may constitute an offence under the Wireless and Telegraphy Act 1947. Check with the various organisations before scanning.

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### FEATURES

- ★ LIQUID CRYSTAL DISPLAY.
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- ★ 200 CHANNEL SCANNING FACILITIES.
- ★ INDESTRUCTIBLE ANTENNA.
- ★ LEATHERETTE CARRYING CASE.
- ★ PRIORITY RE-SEARCH CHANNEL. *(Allows you to locate a channel and keep coming back to it should there be any activity).*
- ★ LOOP DELAY. DELAYS ACTIVITY ON CHANNEL AND WAITS LONGER BETWEEN SCANNING TIMES.
- ★ KEY PAD LOCKOUT. ENABLES USER TO HAVE ONE IN JACKET OR TROUSERS AND KEY DEPRESSIONS WILL NOT AFFECT SCANNER SHOULD THEY BE ACCIDENTLY PRESSED.
- ★ HIGH PERFORMANCE NICAD RECHARGEABLE BATTERIES.
- ★ SQUELCH LOCKOUT FACILITY HELPS REDUCE INTERFERENCE AND LOCKOUT UNWANTED SIGNALS.
- ★ EAR PIECE ADAPTOR FOR CONFIDENTIAL SCANNING.
- ★ BUILT-IN HIGH PERFORMANCE EXTERNAL SPEAKER.
- ★ 12 BAND COVERAGE.
- ★ WEATHER SEARCH.
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### WHO'S USING THE AIRWAYS

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### HOW TO ORDER

You can order your high performance radio scanner in complete confidentiality. We currently accept Mastercard (Access), Visa, Switch, postal order or cheques. Simply phone or mail your order to the address shown. Your order will be despatched for immediate delivery all included in the price.

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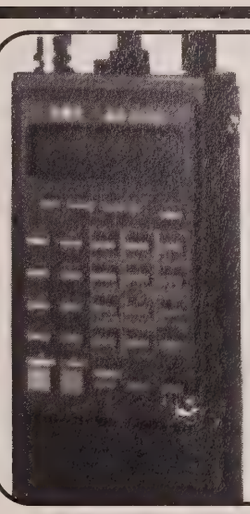

# The new AR2000

500kHz-1300MHz with better sensitivity than the original 2000

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# HF-225

**Gateway to the world**

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**Frequencies:** 30kHz-30MHz.
**Tuning:** 8Hz steps.
**Memories:** 30 channels.
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**Tuning:** Keypad & spin-wheel.
**AM/FM Sync.** Detector *(optional).*
**Keypad** for remote entry *(optional).*

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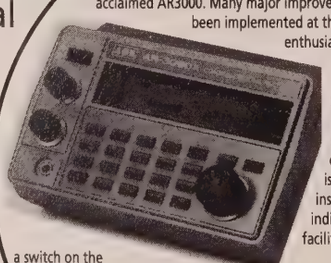
# AR3000A

The AR3000A is a follow on from the highly acclaimed AR3000. Many major improvements have been implemented at the request of enthusiasts. The tuning control is now 'free running' to provide a smooth feel for SSB/CW, x10 buttons have been added to make step size faster and more convenient. All information is contained on the LCD instead of a separate status LED indication. The RS232 facility has a switch on the rear panel to enable/disable operation. Memory clear and full microprocessor reset functions are available from the front panel. The re- writing of microprocessor firmware using an even more efficient language has further increased scan and search speeds.



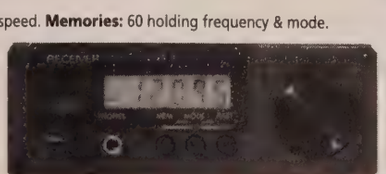
**£765**

# HF-150 Compact Communications Receiver

**£329** inc VAT

Designed as a logical alternative to the Japanese 'push button portables', the HF-150 places a 'real radio' within your price reach. Whilst reflecting the Lowe approach to simplicity of operation, the HF-150 nevertheless has all the features and facilities you need. This truly is 'Real Radio'.

**Frequency coverage:** 30kHz-30MHz.
**Modes:** USB/LSB/AM/Sync. AM (selectable S'band).
**IF Bandwidths:** 2.5kHz & 7kHz.
**Tuning:** 8Hz steps with variable speed. **Memories:** 60 holding frequency & mode.
**Aerial inputs:** 600 ohms, 50 ohms & Hi-Z Whip.
**Power:** 12Vdc from mains adaptor (supplied).
**Case:** All metal light alloy case.
**Size:** 185mm(W) × 80mm(H) × 160mm(D).
**Weight:** 1.3kg (less batteries).



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# AR1500

***100kHz-1300MHz and same modes as the AR2000. Price to be confirmed Approx. £279***

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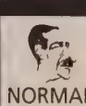


NORMAN G4THJ

**In this, the second part of this constructional project, Brian Adkinson starts on the actual construction, dealing with the main tag board and coil winding.**

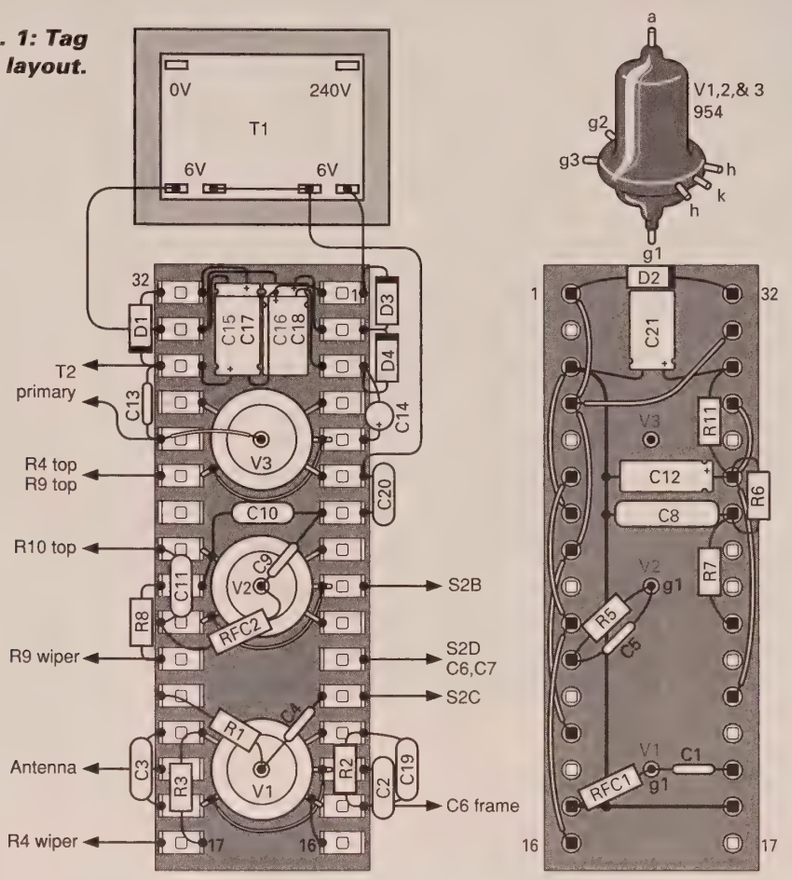
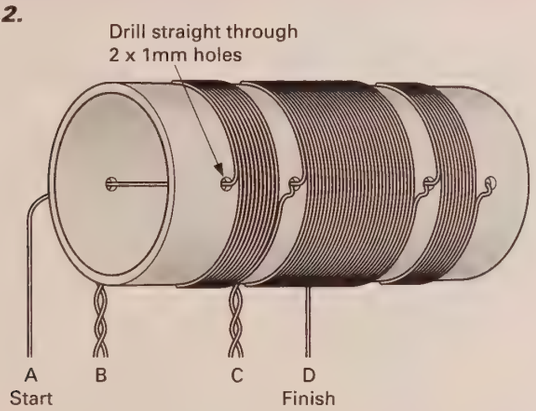



***Fig. 2. 1: Tag board layout.***

## *Component Variations*

Few of the component values are critical and considerable latitude can be applied in the choice of many of them, although the results obtained can not then be predicted quite so readily. Different values of tuning capacitor can be used with an attendant alteration to frequency coverage. If you can, I would recommend obtaining a 'surplus' capacitor from J. Birkett, as they come out about a third of the cost of a 'new' one. I used a 200+200pF

***Fig. 2.2.***



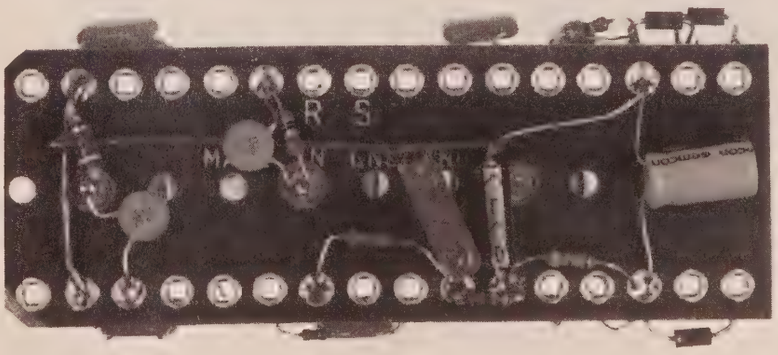

with the two sections wired in parallel. Different wire gauges from those specified can be used for the coils, but again, this will modify the frequency coverage. If a number of substitutions are made together it would probably be quicker to adopt an empirical approach to 'realigning' the receiver.

The coils, for example, can be temporarily wired directly to the circuit board and the number of turns 'tweaked' to get the required freqency coverage, before wiring them permanently to the wavechange switch. I would stick to the specified mains transformer, but for the output transformer the more common 240V - 6-0-6V type could be used, giving a slightly lower audio output due to the poorer impedance match. This will not be a problem if you envisage a 'headphone only' version, there being volume to spare for headphones. It is not necessary to incorporate all four wavebands and coils for just the frequency bands of interest could be wound, thereby simplifying construction.

## *Coil Winding*

This is where some of you shrink away in anguish and scuttle out to the loo. **Short wave coils are easy to wind - that is a fact!** The wire is thick and easy to handle and there aren't that many turns to put on anyway. With this radio there is considerable overlap of the bands making the exact number of turns much less critical. As for the m.w. coil, I would agree, not ideal for those faint of heart and shaky of hand, but not altogether impossible, either. All the coils were wound on formers of approximately 15mm diameter. The precise diameter is not that critical, provided that it is maintained to within ±20% (12 to 18mm). This gives some leeway on the procurement of a suitable piece of tubing for use as a former. The actual size used - 15mm - was arrived at by taking into consideration two constraints on the design. The first being that I didn't want to use the commercially available formers that use a dust core (to increase inductance) as these can bring too great a degree of variability to band coverage and, more importantly, the regeneration feedback. Second, the configuration I have used would mean larger diameter coils being too close to one another, which would affect their resonant frequency and *Q* factor.

It will be a case of looking around for a suitable material, which should, by the way, be plastics or pvc and hollow. As a guide I managed to obtain the plastics centres from empty 'Roltech' electronic calculator rolls. These are 58mm in length and when cut will make one medium wave or two short wave coils. If you



***Underside view of the tag board.***

***Continued over***

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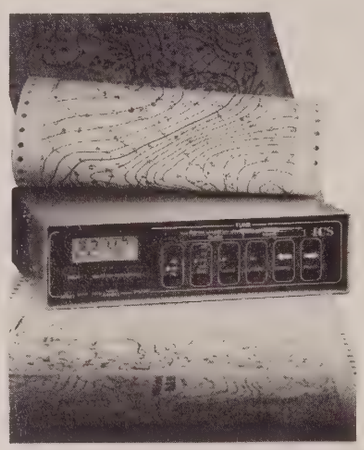

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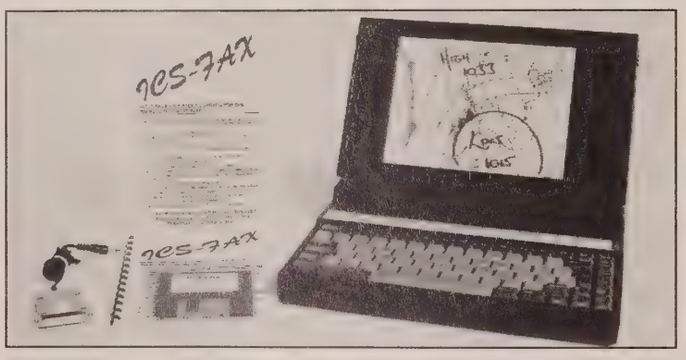


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***Table 2.1 Coil Winding Details***

| | MW<br>600- 2000kHz | SW1<br>2.5 - 7MHz | SW2<br>5 - 14MHz | SW3<br>11 - 32MHz |
|---|---|---|---|---|
| Top winding C to D | 140t | 6t | 3t | 1t |
| Main winding B to C | 140t | Tap at 28t | Tap at 8t | Tap at 4t |
| Bottom winding A to B | Tap at 20t | Tap at 9t | Tap at 2t | Tap at 1¼t |
| Total | 160t<br>36s.w.g.<br>Close-wound | 43t<br>26s.w.g.<br>Close-wound | 13t<br>26s.w.g.<br>Close-wound | 6¼t<br>20s.w.g.<br>Spread over 20mm |
| Former length | 42mm | 30mm | 30mm | 35mm |

can locate an office equipment supplier for these they are ideal, or better still find someone who works in an office ( my beloved) and like me you'll end up buried in a sea of them. Other alternatives are large felt tip or marker pens (cut the ends off with a hacksaw - withdraw the innards - they're in a sealed sheath) and if you get really desperate,it may be worth knowing that on my nationwide search for the elusive '15mm coil former' I did actually find that the centre portion of a B & Q toilet brush handle was just about right as well. (Mind the bristles!) Referring to the diagrams (**Fig. 2.2**). lmm holes were drilled through the former as shown, these being used to secure the start, tap and finish windings. If the specified gauges of wire are used these holes can be pre-drilled. The gap between the windings is not particularly critical and is there just to allow room for the holes. All the coil windings are wound in the same direction, the SW1 and SW2 coils being identical in the method of construction. SW3 needs special mention, as it uses thick wire that is difficult to work with. This makes it virtually impossible to bring out the taps in the same manner as the other coils. It is best with this one to 'pre wind' it - mark (by scratching with a knife) the position of the two taps and then unwind it. The marked positions can then have the insulation scraped off properly so that they can be tinned.

Rewind the coil, making sure the winding 'starts' in exactly the same place as before, otherwise the taps will be in the wrong position. Once the coil is prepared and rewound it is be a simple matter to solder wires to the tap points. If the m.w. coil is to be attempted it should be noted that construction has been made easier by the deletion of the 'antenna' tap. This is not needed for the medium wave band and that connections C and D are linked together. When winding this coil it will be found helpful to wind about ten turns at a time without paying too much attention to precision and then push the windings closely together using a fingernail. A spot of glue could be added at this time to hold this and subsequent sections. This method can be used for the other coils as well. I would advise great caution when using the glue for this purpose as, due to its very low viscosity, it can quickly 'creep' around the winding and 'attack' the nearest available finger. The writer can personally vouch for the speed and tenacity of Superglue, having, on many occasions, stuck his fingers not only to each other but to his foot - just **don't** ask! - and many other objects that have happened to be within 'sticking' range.

It would be prudent to have the 'antidote' to Superglue to hand. This is called: 'Superglue Remover' and comes with special packs of Superglue. The glue should be applied sparingly to the coils and not too frequently as large amounts will affect the all important *Q* of the coil - this most notably on the m.w. one. Leave long leads from all the windings to make sure they will reach the wavechange switch when wiring up.

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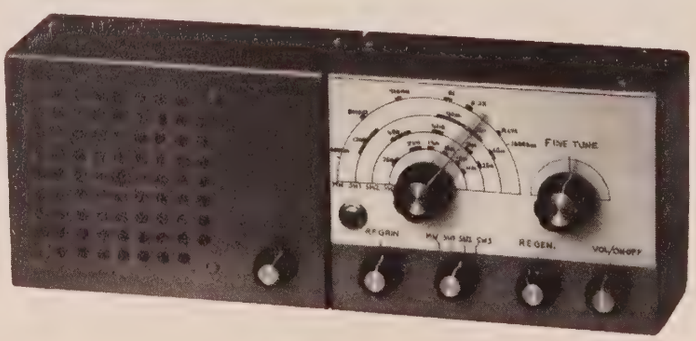


***In Part 3 we will deal with the wavechange switch and start on the case.***

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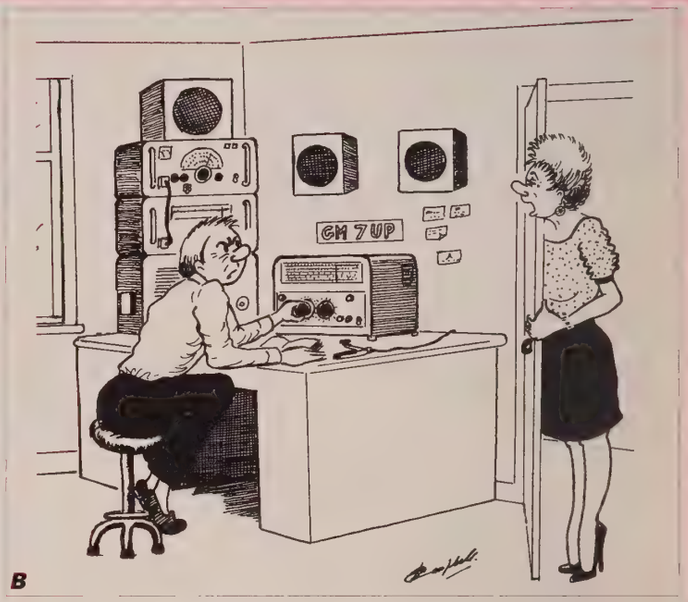


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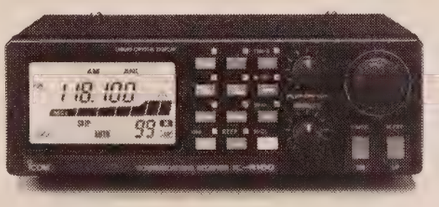

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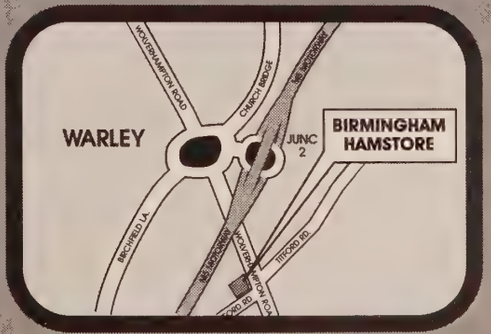


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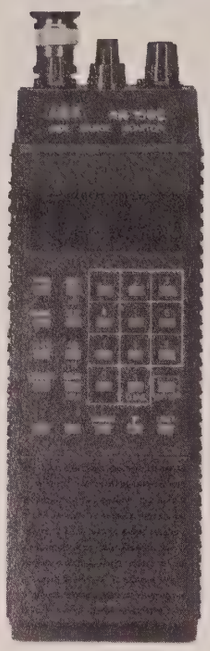

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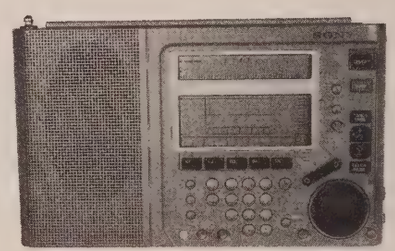

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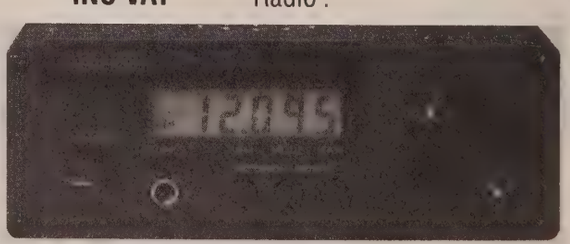

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# A LOT OF HOT AIR

## A BALLOON COMMUNICATIONS

*Having spent many a happy hour watching hot air balloons, Decode columnist Mike Richards thought that it would be interesting to take a closer look at the way they operate and in particular find out what sort of radio communications they use.*

One of the best places to watch hot air balloons is the Bristol Unipart International Balloon Fiesta which is held during August. This Unipart, Jaguar, Rover and Land Rover sponsored event is claimed to be the largest in the UK - with 130 or so balloons making an appearance, I'm sure they're right. In the cause of accurate journalism I managed to hitch an early morning flight in the *Unipart Oil-can*! This is a complex, special shape, balloon with a capacity of some 105 000cu ft (nearly six hundred thousand five-litre cans of Unipart oil!) and was piloted by Chris Dunkley. My flight was part of an early morning lift-off of more than 100 balloons of all shapes and sizes. The excellent weather conditions enabled us to fly extremely low for most of the flight. To give you an idea of just how low, we were able to chat to the local Long Ashton residents whilst they were at their bedroom windows! Although all the balloons were equipped with air band transceivers, inter-balloon communications ended-up as a shout between pilots!

### *Smooth landing*

Our pleasant hour in the air was terminated with a remarkably smooth landing, after using a handy tree as a brake! Once Chris had selected the landing site he needed to contact his recovery team so that they could come and collect us. It was at this point that I discovered just how crude the communications system was. Over one hundred balloons were attempting to contact their respective recovery teams and they were all using the same frequency - 129.9MHz! Not surprisingly we were unable to get through to our team. The day was saved when the *Fosters 4-Pack* balloon

***The Converse All Star 'trainer' treads silently through the air.*** *Photo. David Packman, Air 2 Air Ltd.*

landed in the same field. They had thought to bring a Cellphone with them, which they kindly lent us. This proved to be much more effective and we were soon greeted by our three-man recovery team. It was at this point that the real work began as we had to fit the balloon into a bag that measured no more than 1.2 x 1.2 x 1.2m. This little exercise took six of us three quarters of an hour. The problem was not just the size of the balloon, but the complex, internal baffles that trapped the air inside.

With the balloon flight over and a good breakfast inside me, I set off to find out some more details about ballooning. The solution was an interview with David Packman of Air-2-Air and one of his freelance pilots, Graeme Clarke. As a company, Air-2-Air offer a full range of sponsorship options. These start with a basic system where a company just buys an envelope (balloon) and Air-2-Air fly it at their discretion. At the other end of the scale, they can provide a full, managed, air display package, such as the one they run for National Power. The latest addition to their range is the Radio 1 balloon, featured on the front cover of this issue. With the appropriate callsign G-01FM, this ballon made its debut at the Bristol Fiesta. Incidentally, Mathew Collins from the BBC's *Travel Show* was also at the festival and filmed a flight in this balloon.

### *Costs*

One of the most common questions must be how much does a balloon cost. The price ranges are very similar to cars with a basic amateur model costing about £7000, whilst a basic commercial envelope runs at around £17000. As Dave pointed out, once you get into complex shapes and flash artwork the price escalates rapidly.

It's also interesting to note that hot air balloons are treated as conventional aircraft in many ways. They are regulated by the Civil Aviation Authority (CAA) and have to have certificates of air-worthiness. Even the companies runnning pleasure trips have to hold an Air Operators Licence and are regulated in much the same way as a conventional airline. All this is good news for passengers, as it ensures a common standard of basic safety. In addition to the CAA, the British Balloon and Airship Club (BBAC) carries out some of the regulatory checks on an agency basis.

From the pilot's point of view, the process of qualifying for a balloon licence is much the same as a fixed wing aircraft. There are two classes of licence - private and commercial. The qualifications for these licences are virtually the same as for a fixed wing licence except you have to study balloon systems. I was quite surprised to learn that there are between three and four hundred commercial pilots operating in the UK, of which about one hundred make their full-time living from balloons.

### *Communications*

Moving on to their communication systems, hot air balloons use the air band in much the same way as conventional aircraft. Besides having access to the whole range of air band frequencies, 129.9MHz is allocated for use by balloons and their recovery teams. Incidentally, this frequency is shared with parachutists. Another frequency that's sometimes used is 123.45MHz. This used to be the balloonists frequency until it was allocated to Great Yarmouth Airport. However, you may find it still used in areas well away from Yarmouth. As I mentioned earlier, the system tends to fall apart during any large event, as everyone seems to use the same frequency. It would seem to me to be common sense to temporarily allocate a group of frequencies for use at such events. These could then be shared between the balloons with just a few on each frequency. Although not ideal, it ought to be able to handle the short messages that need to be passed.

I also discovered a strange quirk with the air band

# WHAT SCANNER

Autumn 1992 £1.00

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Versatility is excellent. The AR1500 may be powered from its internal NiCad pack, spare dry batteries may be carried for extended operation and used with the dry battery case, the set may also be plugged directly into the cigar lighter socket of a motor vehicle (external input range 11 - 18V DC).

Although offering a long list of facilities and operating modes, the receiver remains easy to operate. Many facilities have been carried across for the well proven AR2000 receiver. The AR1500 has a new 'automatic memory' feature which automatically stores busy channels from search bank 9 into the 100 memory channels of scan bank 9.

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The AR1500 can meet a number of requirements to satisfy Airband or Marine enthusiasts, Professional off air monitoring and of course casual listening too. The World's shortwave and Amateur bands can be monitored, even the longer range Oceanic Airband and ship to shore. Of course the performance of this compact hand-held receiver can not be directly compared to that of the AR3000A or dedicated General Coverage Receiver.

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***Recommended Retail Price of £299.00 including VAT.***

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***Recommended Retail Price £279.00 including VAT.***

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The AR3000A is powered from 13.8V DC, a suitable mains power supply is provided with the receiver. Other accessories include a telescopic whip, DC lead and comprehensive operating manual.

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E&OE

**Dear Sir**
We have, I'm sure, all read about a certain Mr Reenan eavesdropping on a conversation that is alleged to have taken place between HRH The Princess of Wales and a certain John Gilbey. It appears that Mr Reenan had a scanning receiver that enables him to hear such conversations.

In many newspapers Mr Reenan is described as a radio ham, though I think that this term is very often used by the media to cover both CB operators and listeners on v.h.f. and u.h.f. In fact, the local newspaper the *Liverpool Daily Post* stated that the gentleman in question had violated the terms of his amateur licence, which I do not think is correct, as the offence is to transmit and contact other services other than licensed amateurs.

I think that it should be clarified as to whether one is within the law to pass information originating from other services to a third party.

Many years ago, I think, the old Broadcast Licences had a clause inserted which stated that the licence only allowed the holder to receive broadcast stations operated by authorised services.

Perhaps some comment could be made in this magazine.
**J.J. Parry G4AKX**
**Northwich, Cheshire**

*As far as I can remember, the old Broadcast Licence allowed the holder to listen to 'Authorised Broadcast Stations and Licensed Radio Amateurs'.*

*It is most definitely outside the law to listen to telephone conversations, let alone pass on details of what you heard. It is, of course, also illegal to listen to anything other than Authorised Broadcast Stations and Licensed Radio Amateurs, unless you have the appropriate licence or authority to do so. This is covered elsewhere in this issue of* What Scanner. *As a licensed radio amateur you cannot pass 'third party traffic', either.*

*Mr Reenan does not, as far as we can ascertain, hold an amateur licence of any sort and, therefore, cannot be correctly described as a 'radio ham'.* ***Editor.***

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# Hello Again

Welcome to another issue of *What Scanner*. A whole year has passed since the last one appeared and a lot of water has passed under the bridge since then. How will the ripples spreading out from the 'Dianagate' incident affect the hobby? No one knows, but we are all keeping our fingers crossed and hoping!

I hope that you enjoy reading this issue of *What Scanner* and don't forget that there are regular Scanning, SSB Utility Listening and Airband columns in *Short Wave Magazine* every month.
**Dick Ganderton**

**Dear Sir**
The recent revelations that appeared in the national press of the activities of two scanner owners living in the Oxford area have served to throw into vivid contour the unacceptable face of scanning as a hobby. No doubt many readers felt the same repugnance as myself when they read of the use that had been made of information received on a scanner.

It would be a brave man who dares to pontificate as to the way in which scanner owners pursue their hobby, but it has' always been assumed that, for most owners, there is a sort of inbred restraint, which subconsciously controls the interest in incoming signals, so that, in my own case, when I am aware that I am listening to something which is of no consequence to me, I move on.

It may well be argued that all scanning is eavesdropping - this has been noted before - but to be the 'guest' on the flight deck of a 747 as it travels through the night sky to reach its destination is worth much to me and to hear the concern that the crew have for the arrangements of their passengers is heart-warming. Equally, it is rewarding to learn of the latest developments in our hobby from the users of the many amateur repeaters that daily give out a regular compendium of useful information without even knowing it. Whether it be the sailor aboard his boat in conversation with the Queen's Harbour Master, the mobile amateur in his car on his way to work, or even the pensioner with his hand-held walking his dog in the park, there is so much of honest value to be gleaned from the airwaves by the use of a scanner that anything of dubious origin cannot really be considered a worthwhile part of this wonderful hobby.

I look forward to the day when much that is of use to the criminal and those of somewhat dubious intention is scientifically beyond their reach. But in the meantime, let us seek to discover the best, not the shoddy, from this fascinating hobby of scanning.
**Percy G. Tannac**
**Gosport, Hants.**

Cover credit. Nevada Communications kindly provided the photograph featured on our front cover.

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# Scanning Responsibily

Modern scanners make it very easy to receive all sorts of interesting radio transmissions, from the CBer round the corner, the amateur in the next town, the ship captain crossing the channel, the pilot flying to Europe and the cosmonaut orbiting the Earth. Alan Gardner offers some advice on using your scanner in a responsible manner.

Owning a scanner is perfectly legal, but what may not be quite so obvious is that it is only legal to listen to one of these signals mentioned in the introduction to this article. Which one? The one being transmitted by the amateur radio operator. Having said that it is very unlikely that anyone would be prosecuted for listening to such transmissions, unless it involved another offence of a more serious nature. This is actually stated in a document produced by the DTI Radio Communications Agency intended for law enforcement officers. To my mind, this is a perfectly acceptable situation as it is unlikely to affect the majority of responsible scanner owners whilst at the same time it allows a prosecution to be made when misuse is evident. When the law is enforced it is generally because someone has been caught listening to the Police or another emergency service in public or whilst participating in some other form of criminal activity.

These prosecutions are usually brought under Section 5(b) (i) of the 1949 Wireless Telegraphy Act and the normal outcome is that a first time offender usually receives a couple of hundred pounds fine and has his or her scanner confiscated. Another more serious offence is committed when a scanner is used to monitor radio transmissions associated with private telephone conversations. In this case, an additional offence is committed under the Telecommunications Act 1984 Section 79 and *The Interception of Communications Act 1985 section 1*. Once again prosecutions under this act are usually the result of using a scanning receiver in public or due to passing on information heard during such conversations. In these cases a much larger fine, often several hundred pounds, is levied and the scanner along with any associated equipment is confiscated. Recent events may well change this situation, there are already calls for a clampdown on the sale of scanning receivers and a tightening of the law relating to their ownership.

## Restrictive

Please give some thought to the way in which you use your scanner otherwise the law may well be made more restrictive. In some European countries for example ownership of scanning receivers is illegal and members of the public are actively encouraged to report anyone they suspect of using one. Many factors have contributed to the current climate in this country, for example public service organisations are disturbed about the number of scanners in circulation and are currently looking at ways of making their transmissions more secure. Many Police Forces will be introducing speech scrambling on their personal radio systems during the forthcoming year. This is directly as a result of the number of times they are finding scanning receivers when they raid suspects' homes. In the majority of cases the receivers are usually cheap 10 or 20-channel models sold in the high street, but even these permit the monitoring of most Police frequencies. Another aspect of this problem is the widespread circulation and publication of frequency lists which detail specific Police and security service allocations along with their usage and channel numbers. This makes it very easy for a criminal or terrorist with little or no technical knowledge to abuse the information. It also makes it necessary for the compromised user to change its operating practices, equipment and frequencies. Cellular telephone service providers have also come under pressure to improve the security of transmissions mainly due to the large number of influential people who make regular use of such systems. Privacy has improved to a certain extent with a reduction in the size of individual cells in urban areas. This makes it much more difficult to follow an individual conversation as the cellular system switches the transmissions between base stations. A new digital system is also about to be launched which will prevent all but the most determined attempts at

**Nevada MS-1000. Reviewed in May 1991 *Short Wave Magazine.***

**Icom IC-R1. Reviewed in July 1990 *Practical Wireless.***

eavesdropping. Let us hope that these improvements in technology will make it unnecessary to change existing laws.

## Privacy

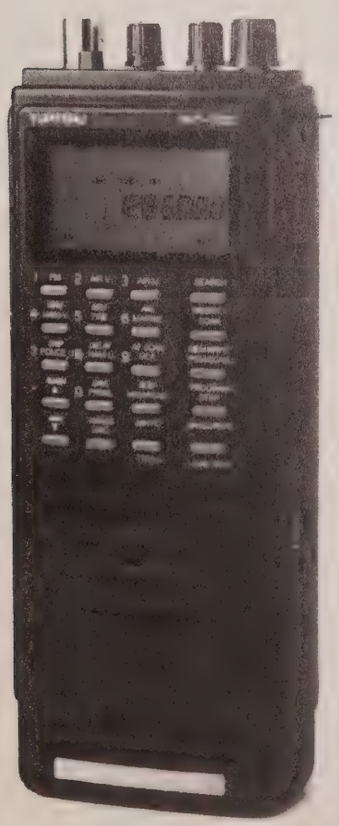
Here are a few suggestions on how to use your scanner responsibly and keep yourself (and other people) out of trouble. Although it is unlikely that you would ever be discovered, provided that you only listen in the privacy of your own home, it is illegal to listen to almost any signal without the authority of the person transmitting and there are ethical considerations to be made. Imagine how you or members of your family would you feel if other people were listening to your private conversations or, worse still, circulating taped copies of them. You may know how easy it is to monitor certain transmissions and would be careful what you said, remember that most people are not aware of the risks.

Don't bring yourself or your hobby into disrepute. Don't use your scanner to listen to anything other than Amateur or Broadcast stations in public. Some services turn a blind eye to monitoring by enthusiasts, for example listening to aircraft communications at airports.

Don't misuse this trust. Ask for permission where possible and use an earphone or better still a 'Walkman' type headset to minimise annoyance to other people in the vicinity. Don't take your scanner to the pub or club so that your mates can listen to what's going on, as you could easily attract the wrong kind of attention, such as an off-duty Police Officer or a thief planning his next break-in. Similarly, it is not a good idea to advertise your scanning activities to your neighbours, sooner or later they will think you are listening to them via their TV, microwave oven or toaster.

Don't pass on any tape recordings you may have made to other people as the more embarrassing the contents the more likely it is to end up in the hands of a journalist, and we all know what that can lead to. Similarly, passing on written information such as frequency lists can have several drawbacks, the information may eventually be published making someone else rich, the services affected are forced into changing their operating procedures, frequencies and in some circumstances encrypting their transmissions. In serious cases they may attempt to privately prosecute the originator of the information. If, despite my warnings you choose to break the law, I would not advise you to leave Police, Emergency service or Cellular telephone frequencies programmed in your scanner. And finally, a point which should really be self-evident. It is not a good idea to turn up at a the scene of a crime or disaster with your scanner squawking away at full volume - some people have been known to - usually just the once!

If you require further information on the use of scanning receivers the DTI Radio Communication Agency produce an information sheet, number RA169, entitled *Receive Only - Scanners, etc, information sheet.* This is available free of charge from The Library, DTI Radio Communications Agency, Waterloo Bridge House, Waterloo Road, London, SE1 8UA.



**Yupiteru MVT-7000. Reviewed in August 1991 *Short Wave Magazine.***

**AOR AR-3000. Reviewed in January 1990 *Short Wave Magazine.***

# Getting Started

Philip Davies discovered the world of scanners, almost by accident, just a week before writing this article.

It all started in a hi-fi shop. I asked the man behind the counter for a radio which could also pick up TV sound. "No such thing mate," he assured me. "I've been asked for that time and again, but they just don't make 'em." So I walked out convinced that he was wrong. But what now?

A few days later I had a brain-wave. I popped into W H Smiths and had a look through the electronic mags to see what was being advertised. It was there that I discovered a new world. I found out about scanners. Here was my 'TV Radio'. I left Smiths clutching two mags I'd never read before - one of which was *Short Wave Magazine*, of course.

Paging through them was like trying to understand a new language. What is DXing? And what about 'a built in b.f.o. for s.s.b.'? Even r.f. took me some time to work out.

## Careful Reading

After a week of careful reading, I'd worked out the sort of scanner I was after - one with 'no-gaps' coverage. That way I wouldn't be missing anything. If I developed a special interest in some area later, I didn't want to find out my scanner didn't cover that little bit. So, a no-gaps coverage seemed the safest bet for a complete beginner like me. And anyway it was only the no-gaps scanners which covered the TV bands.

To receive TV sound and most commercial broadcasting you need a scanner capable of w.f.m., the wide bandwidth being needed for quality sound broadcasting and music. So that was another must.

I also wanted a hand-held type, so I could take it with me in the car and use it at airports and the like.

With these restrictions I narrowed down the choice to three scanners:

| | |
|---|---|
| **Icom IC-R1** | |
| 100kHz - 1300MHz | £325 |
| **AOR AAR2000** | |
| 500kHz - 1300MHz | £259 |
| **Yupiteru MVT-7000** | |
| 1 - 1300MHz | £275 |

Of these I preferred the Icom because it had the wider range - I like to listen to Radio 4 on 198kHz sometimes and this was the only scanner able enough to receive it. The Icom was also the smallest of the three, but that didn't really appeal to me. After all it meant a smaller speaker and tiny buttons - hard to press, said one reviewer - which can become a real nuisance after a while. On the down side it was also the most expensive.

Next step, over to the *Yellow Pages* for my local dealer. There was a branch of Lowe Electronics within 16km, so I rang them up. The fellow on the other end seemed very patient with my novice enquiries. "Are they hard to operate?", "Can I really get TV sound on them?", "What else can they be used for?"

Later that day I drove over and saw a real-life scanner for the first time. He only had the MVT-7000 in stock and something called the Fairmate HP2000 which he assured me was identical to the AR2000 but with a different badge. It certainly looked the same. In the hands of an expert I was impressed. He pushed a few buttons and out came air traffic control and what have you.

## Read the Instructions

I left the shop with the HP2000 and a warning to read the instructions very carefully and not to get too disappointed at first. Many first-time buyers, he said, came and brought the thing back unable to get anything on it, thinking it had gone wrong. He jotted down a few frequencies for me to start with even threw in the *Complete VHF/UHF Frequency Guide* for free.

Back at home I began to understand what he meant. I read the manual from cover to cover. There was nothing particularly difficult about it. I'd been using a PC for the last year and anyone who can comprehend MS-DOS will have no difficulties with a scanner. There were a few oddities I couldn't understand to start with, like what is the difference between search and scan? And why have so many memories? The HP2000 has the capacity to store 1000 different frequencies! Who's going to use all those? Certainly not me, I thought. I'd only need about ten at the most. Ha!

The search and scan I worked out. Search will look for transmissions between any two given frequencies - just like twiddling your dial on an ordinary radio. Scan will look for transmissions amongst any of the frequencies you have stored in the 1000 memories. As I hadn't stored any yet, I began with search.

## White Noise

I switched it on, plugged in upper and lower frequencies and pressed the search button. That's when I hit my first problem. Fuzzy white noise poured out and it wasn't searching. I pressed search again. The frequencies moved a little and then stuck on the noise again. I kept pressing the button but it wouldn't search properly. I checked the manual. Nothing. Tried again. Nothing. I nearly became one of the 'take-it-back brigade'!

Doing what everyone does in such a situation, I started twiddling knobs randomly. Instantly the problem was solved. The numbers on the dial started whizzing as it hunted down these broadcasts. What had I done? Just turned some control called SQUELCH. What was that? I can' t say that I know even now, but it does cut out all the back ground noise and lets you search for the real signals. It seems the best position for it is teetering right on the edge of the noise. That way the weakest signals can be picked out - though I have found that you have to be

**Fairmate HP-200E.**

careful. You can miss signals that are still clear enough to be made out, but the noise is just covering them. The only way to be sure is to turn squelch right down on those frequencies you are particularly interested in.

## Discouraged

After I'd had it searching some time, I hit problem number two. I found next to nothing. It was then that I recalled the words of the man in the shop about getting discouraged. And I could see why. The coverage of these scanners is so vast that it' s like looking at the night sky through a drinking straw and hoping to see a star. There's a lot of space up there and not much else in comparison!

Well, disappointment set in. I couldn't find anything and I wondered why on earth I'd just spent £250 on a piece of equipment that promised so much and did so little.

Next day I tried again. There wasn't a problem with the equipment, I discovered, but rather my preconceptions about scanning. I'd thought all you have to do is press a button or two, and bingo, it's all there at your finger tips. I hadn't realised you had to jolly well look hard for what you wanted. At least to begin with. It's a big world out there between 500kHz and 1300MHz and it's going to take a bit of work to get hold of what you want. Once my attitude was readjusted to the task, I was off again.

## Hard and Easy

I realised that it wasn't always going to be hard work. There are two completely different ways of scanning; what I now call 'hard scanning' and 'easy scanning'. For a beginner, the hard scanning has to come first.

Hard scanning is with the search button, dredging through the wave bands for an interesting frequency. The frequency guides, I found, only give limits between which you can expect to find the interesting signals, not the spot on frequencies

**Realistic PRO-2006. Reviewed in February 1991 *Short Wave Magazine*.**

themselves. To find them you've got to sit down with the search button and a plentiful supply of coffee. When you do find a good signal, hold onto it and enter it into the memory.

Easy scanning is done with the scan button. Once the memory banks are built up, everything is plain sailing. Pressing the button means you are only looking at interesting frequencies and not wasting time on empty space. And that means the success rate is 100 times better.

## Organised

It's important to be organised when storing your frequencies. You're not going to be able to remember what you've put in a thousand pigeon holes, so a little fore thought is required. As the scanner neatly divides the memory into ten banks I decided to put all the commercial broadcasting frequencies into Bank 1. TV stations, f.m. radio and interesting short wave transmitters have so far eaten up about 50 channels in this bank. Bank 2 I've reserved for air band frequencies. Bank 3 is for marine. In Bank 9 I've got emergency frequencies, Bank 0 I use as a work space into which I put all the frequencies that I find temporarily, moving them to permanent locations once I have decided that I want to keep them. I'm sure that there are better systems than mine - and you can make up one to suit your own needs quite easily.

**Fairmate HP-100E. Reviewed in February 1990 *Short Wave Magazine*.**

## Duplex

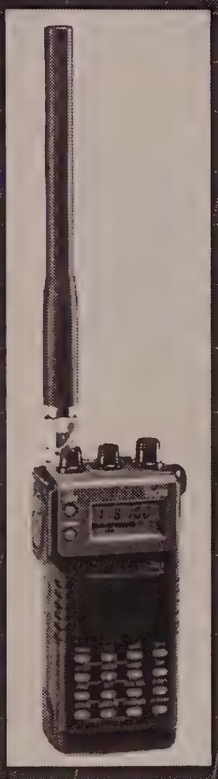
Another tip I came across, in a magazine, was storing duplex frequencies. These, I discovered are what are being used when you can only hear one side of a conversation. One person uses one frequency and other a different frequency to reply on - a system which makes for frustrating scanning. The way round this is to find the two frequencies (using 'hard scanning') and then store them along side each other in the memory. Then, when you hear someone speaking, you simply have to turn the up/down tuning knob (on top of the scanner) one click to switch to the return channel and hear the reply. Switching back and forth will allow you to hear the whole message.

I've now had the scanner less than a week and already 15% of the memories have been allocated! So was it a good buy? Yes - once you have made the effort to learn how to use it and have formed a realistic picture of just what is out there. All I need now is a good antenna.

## Abbreviations

| | |
|---|---|
| % | percent |
| b.f.o. | beat frequency oscillator |
| DXing | 'long distance' listening |
| f.m. | frequency modulation |
| kHz | kilohertz |
| MHz | megahertz |
| r.f. | radio frequency |
| s.s.b. | single sideband |
| TV | television |
| w.f.m. | wideband f.m. |

# SCANNING PERFECTION



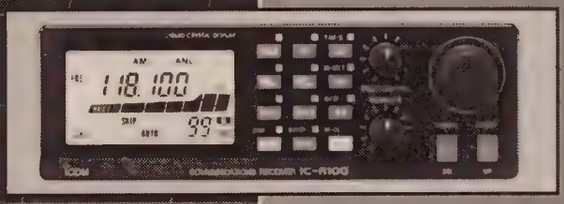
**Shown here are four models from the ICOM range of scanning receivers. They are all designed to satisfy any scanning requirement you may encounter. Remember, whatever you want to listen to, ICOM will have the receiver for you.**

**IC-R1 Handheld Receiver.**
Tune into the world around you on the IC-R1, one of the smallest receivers ever made. With continuous coverage from 2MHz - 1300MHz, AM, FM and FM-wide reception right into the palm of your hand.

- Ultra compact size.
- 100 memory channels.
- Direct keyboard entry.
- 10 programmed scan ranges.
- Auto power save.
- 24-hour system clock with timer functions.
- Advanced scan functions.
- Built-in S-meter.
- Built-in nicad batteries.
- 49(W)x102(H)x 35(D)mm.

As always, ICOM offer full warranty on ICOM equipment purchased from the many authorized dealers within the UK. In some cases the equipment will be replaced if the fault is deemed beyond speedy and satisfactory repair. Any ICOM equipment purchased from an unauthorized ICOM dealer is not covered by ICOM warranty

**IC-R100 Mobile/Base-Station Receiver.**
On the road or at home the IC-R100 is the ideal solution to receiving stations in the 500kHz - 1800MHz frequency range. For listening convenience a 24-hour system clock with timer functions, 100 memory channels, direct keypad entry and handy scan functions are featured.



- AM, FM and FM-wide modes.
- 10 programmed scan ranges.
- Priority scan • Memory scan.
- Auto memory write scan. • AFC function.
- Variety of tuning steps.
- Built-in preamp and attenuator.
- 150(W)x50(H)x181(D)mm.

**IC-R7100 Wideband VHF/UHF Base-Station Receiver.**

- All mode from 25MHz to 2GHz.
- Basic, window and dual scan.
- 900 memory channels.
- CI-V system for computer control.
- Built-in clock and timer.
- Noise squelch and S-meter squelch.
- Noise blanker and attenuator.
- Optional TV/FM adaptor.
- 241(W)x94(H)x239(D)mm.

**IC-R72 HF Base-Station Receiver.**

- Frequency coverage: 30kHz- 30MHz.
- High sensitivity.
- Advanced DDS system.
- 100dB dynamic range.
- 24-hour system clock with timer.
- Direct keypad entry.
- Preamplifier and attenuator.
- 99 memory channels.
- 241(W)x94(H)x239(D)mm.

**Icom (UK) Ltd. Dept WSC.**
**Sea Street, Herne Bay, Kent CT6 8LD.**
**Tel: 0227 741555. Fax: 0227 741742 or**
**International House, 963 Wolverhampton Road. Oldbury,**
**West Midlands B69 4RJ. Tel: 021 552 0073. Fax: 021 552 0051.**

ICOM

# S.R.P. TRADING

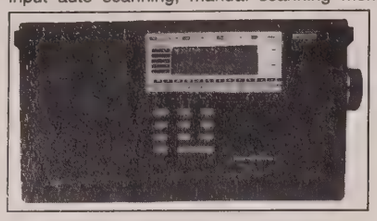
## SANGEAN ATS 803A

**(Direct key-in world receiver with quartz alarm clock timer)**

**Tunable BFO SSB/CW!**

### Specifications and features

★ 150-29.999 continuous tuning with no gaps. Phase locked loop-double conversion Superheterodyne ★ Full shortwave/AM/SSB 150-29999kHz no gaps! + FM87.5-108 mono/stereo ★ Five tuning functions: Direct press button frequency input auto scanning, manual scanning memory recall and manual tuning knob



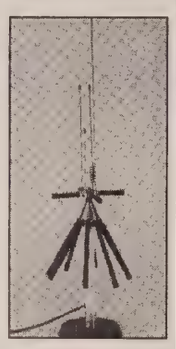
★ Built-in clock and alarm. Radio turns on automatically at preset time and frequency. ★ Large digital frequency display. ★ Fourteen memories – nine memory channels for your favourite station frequencies. Last setting of mode and waveband stored in five memories. ★ Direct press-button access to all 12 shortwave broadcast bands. ★ Two power sources – battery or AC mains adaptor. ★ General coverage of all AM bands in LW/MW/SW (dedicated broadcast band coverage on all versions), plus of course the FM band for quality sound broadcasts in headphone stereo. ★ SLEEP function turns the radio on or off after an adjustable time of 10-90 minutes. ★ Separate BASS and TREBLE controls for maximum listening pleasure. ★ External antenna jack for better reception. ★ Adjustable RF GAIN control to prevent overloading when listening close to other strong stations or if there is interference. ★ New improved wide/narrow filter (6/2.7kHz) ★ BFO control (Beat Frequency Oscillator) enables reception of SSB/USB/LSWB (single side band) and CW (Morse Code) transmissions. ★ Illuminated display to facilitate night-time use. ★ Designed for both portable and desk top use. ★ Five dot LED signal strength indicator.

DIMENSIONS: 29.2cm×16.0cm (11.5in×6.3in×2.36in).
OUTPUT: 1200mW (10%THD) WEIGHT: 1.7kg (3.75lbs) without batteries. Wide/narrow filter switch.

**£109.95 + £5 check, test and p&p.**

## SKY SCAN

### Desk Top Antenna Model Desk 1300

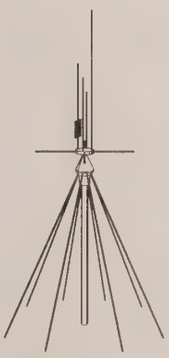


Built and designed for use with scanners. Coverge: 25 to 1300MHz. Total height – 36ins – 9ins at widest point. Comes complete with 4 metres of RG58 coax cable and BNC connector fitted.. Ideal indoor – high performance antenna and can also be used as a car antenna when your car is static. REMEMBER YOUR SCANNER IS ONLY AS GOOD AS YOUR ANTENNA SYSTEM!

**£49.00 + £3.00 p&p**

## SKY SCAN

### V1300 Antenna



Most discones only have horizontal elements and this is the reason that they are not ideal for use with a scanner. Most of the transmissions that you are likely to receive on your scanner are transmitted from vertically mounted antennas. The Sky Scan V1300 discone has both vertical and horizontal elements for maximum reception. The V1300 is constructed from best quality stainless steel and aluminium and comes complete with mounting pole. Designed and built for use with scanners.

**£49.95 + £3.00 p&p**

## SKY SCAN

### Magmount MKII

For improved performance, wide band reception, 25 to 1300MHz. Comes complete with protective rubber base, 4m RG.58 coax cable and BNC connector. Built and designed for use with scanners.

**£24.95 + £3.00 p&p**

# PART EXCHANGE WELCOME

PART EXCHANGE WELCOME

## YUPITERU

### MVT 7000 HANDHELD

PROBABLY THE UK'S MOST POPULAR HANDHELD SCANNER!

★ Receives 8 to 1300 MHz 100kHz-1300MHz (at reduced sensitivity)
★ 200 Memory channels
★ Rotary or keypad freq. control
★ AM/FM/NFM
★ Large display with signal strength ..mete

EACH SET IS SUPPLIED COMPLETE WITH:- Full set of high power NiCads, AC charger, DC power lead and carry strap.....**£289**

### MVT 8000 MOBILE/BASE

This new model is the mobile version of the popular MVT 7000 Handheld above.

★ Receives 8 to 1300MHz, 100kHz to 1300MHz (at reduced sensitivity)

THIS RADIO IS ESPECIALLY SENSITIVE AT UHF FREQS. Set is supplied with mains power unit.....**£299**

### MVT 6000 MOBILE/BASE

An economy version of the new MVT 8000 above -housed in the same case.

★ Receives 25-550MHz, 800-1300MHz
★ 100 Memory channels

**SPECIAL PRICE** .....**£199**

### AIRBAND RADIOS

This month we are pleased to introduce **THE WORLDS FIRST DEDICATED CIVIL/MILITARY AIRBAND RECEIVER, THE VT225.**

A powerful pocket scanner that leaves the competition standing. - A super sensitive set designed for optimum performance on the Civil/MilitaryAirbands.

★ Receives 108-142 MHz Civil Airband 222-391MHz Military Airband 149.5-160MHz Marine Band
★ 100 Memory channels
★ AM/FM on VHF
★ Priority channel function

**EACH SET IS SUPPLIED COMPLETE WITH:-** NiCads, earphone, carrying strap and mains charger.....**£229**

### VT-125 UK CIVIL AIRBAND RECEIVER

Using the same technology as the VT-225, this set covers the full Civil Airband - hearing distant signals that are inaudible on some other scanners.

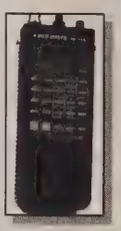
★ Covers 108-142MHz
★ 30 Direct entry memories
★ Search steps 25, 50, 100kHz SUPPLIED COMPLETE WITH NICADS AND UK CHARGER.....**£149**

## FAIRMATE

### HP2000

STILL ONE OF THE MOST POPULAR HANDHELD SCANNERS ON THE MARKET.

Over the last year the HP2000 has outsold almost all other models.



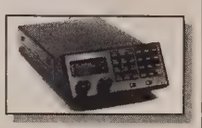
★ Continuous coverage from 500kHz to 1300MHz
★ 1000 channels of memory
★ Keypad or rotary control
★ AM, FM and WIDE FM modes
★ Search steps from 5 to 995kHz

**EVERY SET COMES COMPLETE WITH:-**

Full set of high power NiCads, 2 antennas, carrying case, earphone, DC cable, belt clip and strap, UK charger .....**£269**

### MS1000 BASE/MOBILE SCANNER

MOBILE VERSION OF THE HP2000 HANDHELD BUT WITH SEVERAL ADDITIONS:-



★ Switchable audio squelch
★ Tape recorder output socket
★ Automatic - signal operated tape recorder switching
★ All metal case for improved EMC compatibility
★ Receives:- 500kHz - 600MHz, 805 - 1300MHz. Supplied with mains power supply.....**£229**

## AOR SCANNERS

### AR1500 HANDHELD

Covers 500kHz to 1300MHz receiving NFM, WFM, AM, and SSB. Supplied with a large selection of accessories including:-

★ Charger
★ Dry cell battery case
★ 5 mtr LW antenna
★ Ear piece
★ Soft case

**NOW IN STOCK** .....**£279**

### AR2002 BASE/MOBILE

Receives 25 - 550MHz, 800 - 1300MHz, AM, FM, WFM Super-sensitive receiver .....**£399**

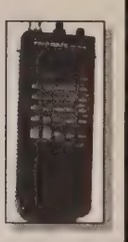
### AR2500 BASE/MOBILE

Receives 5-550MHz, 800-1300MHz AM, NBFM, WFM.1984 Memory Channels, Fast 36 CH/SEC Scan. Resolves SSB with BFO control .....**£399**

### AR2800

★ Receives 500kHz - 600MHz, 800 - 1300MHz AM, FM, WFM. SSB capability with BFO.
★ 1000 Memory .....**£395**

## SCANNERS



**ALINCO DJ-X1** HANDHELD SCANNER

★ Covers 500kHz to 130MHz
★ AM/FM/WFM
★ 100 Memories
★ 3 Scanning speeds

PLEASE NOTE:-
ALINCO DO NOT INCLUDE BATTERIES AND CHARGER AT THIS PRICE.
.....**£249**

**SRP Trading, Unit 20, Nash Works, Forge Lane, Belbroughton, Nr. Stourbridge, Worcs.**
**Tel: (0562) 730672. Fax: (0562) 731002**

# My First Radio

**Graham Tanner recalls how he got interested in scanning and airband in particular, during his teenage years.**

I was a teenager during the 70s and had always wanted a small, hand-held radio that I could use to listen in to aircraft. My weekend job didn't pay much, but I soon had enough to buy a small pocket-sized receiver. It was my pride and joy and living near Heathrow Airport meant that there was always something to listen to. Listening to things other than aircraft didn't really occur to me.

That small radio served me well for quite a few years, but I soon realised that it had its limitations. I wanted to be able to tune exactly to any given frequency, so that when I was following the progress of any particular flight I knew that I would have to waste time 'twiddling knobs' to find the correct frequency. I also wanted some form of memory so that I wouldn't have to rely on a piece of paper covered with frantic scribblings.

Then, one day, somebody showed me his 'new radio'. It only covered v.h.f. airband (118.000 - 136.000MHz), it had a small l.e.d. display for the frequency, it had 20 memory channels where you could store a frequency, and (quite amazingly) you could rapidly scan through the memory channels until somebody spoke on one of the stored frequencies. This was a revelation - it cost 'an arm and a leg' but seemed to do all I wanted. You could scan frequencies in the memory channels, search through all the frequencies between certain limits, and you could set your own limits to cover ranges of particular interest.

Now, over a decade later, I have a scanner that covers just about everything, with more memories than I know what to do with, all in a package not much larger than the average personal stereo.

Nowadays, receivers (or scanners) seem to get smaller and cheaper each year. They have more functions and buttons, and enough wierd button-pushing sequences to confuse even a MENSA genius. I've had my present scanner for over a year, and I still find different ways to make it do different things. As time goes by, manufacturers put more and more into receivers, but their prices seem to stay fairly steady. There are more memories, more scanning methods, greater frequency ranges, smaller cases, and better or more accessories.

Many of todays scanners were originally designed for the American market, so they are adapted to suit their frequency ranges and modes, and they have the kind of facilities that suit the American market place. One particular example is the u.h.f. airband allocation in the USA - its upper limit is 380MHz, and everything above that is 'public services'. Over here in Europe, the u.h.f. airband segment reaches as far as 400MHz. Scanners designed for the US market that cover u.h.f. have a coverage from 380MHz to about 500MHz. If you have a scanner that has 380MHz as the lower limit of the UHF band, then it was originally designed for the US market. Another factor which differentiates a scanner designed for the US market and a one designed for the UK market, is whether it has more SCAN facilities or SEARCH facilities.

Those scanners destined for the USA will have a distinct preference for SCAN rather than SEARCH functions. In the USA, details of most radio frequencies and their assigned users can be obtained from the US Government under the freedom of information act. In almost every US State you can purchase books which list almost every frequency for every conceivable user in the State - dog catchers, park keepers, burger-bars, TV and radio stations, crematoriums (!), bus companies, the post office, railways, as well as the more normal airband, police, fire and ambulance. To the casual visitor, the sight of one of these books can be quite an eye-opener. All the American scanner -owner has to do is to open his frequency book, enter his 'target' frequencies into his scanner memory channels and start scanning. Things work rather differently over here in the UK. The guardians of the airwaves, the DTI, do not release exact details of who uses what frequencies and what they use them for. The DTI does, however, release details of the various frequency bands, giving brief details of their usage. These descriptions are quite vague, and they leave the reader to their own minds as to what exactly happens in the various bands. Such descriptions are 'Land mobile' and 'Fixed service', neither of which really explain which services use that band, or what they use it for. Although you can buy several books that claim to offer the 'fullest v.h.f./u.h.f. coverage ever', they probably hardly scratch the surface. A scanner designed for the UK market, therefore, has better SEARCH facilities than SCAN ones.

To find new frequencies, and to work out who uses them and what for, can takes literally days or weeks of patient searching, until a good picture can be built-up. Once you have identified particular frequencies, they can then be transferred into memory channels, and become part of your regular scanning. Many frequencies are allocated to more than

**Yupiteru VT-125. Reviewed in August 1991 *Short Wave Magazine*.**

one user in adjacent geographical areas, so it is possible to hear two different types of conversation on any frequency; that means that you usually have to spend twice as long finding out exactly what's going on. After spending some time finding which frequencies are in use locally, you may want to visit somewhere else local, possibly a hill-top site, and listen from there to see what else you can hear. It can be quite surprising to hear signals from many, many miles away.

## To Listen, or Not To Listen

During the Summer, the use of scanners received a vast amount of publicity when it was alleged that members of the Royal Family had been heard using car-phones by people with scanners. Whether this was good publicity or bad publicity depends upon you viewpoint regarding scanners. It certainly brought the subject of scanners and 'scanning' into the public eye, and made quite a lot of people realise just how much information can be gathered with a simple and cheap receiver. This has probably worried quite a few car-phone salesmen. In the past I have been offered several car-phones, and I have always asked if the system is secure, and "can anyone overhear my phone calls?". The salesman, of course, replies that it is impossible for anybody to eavesdrop on my conversations. Now that the media has revealed exactly what can be heard, and how easily, I am now very tempted to go and ask the same salesmen if it is still a secure system.

Many scanners these days come pre-loaded by the manufacturers or importers with the most active frequency bands, including both car-phone and car-base frequency ranges. I find it hard to believe that somebody with a new scanner is not going to try to listen to these transmissions, just to see what can be heard. From experience, many of the calls are quite boring, but once in a while you overhear some quite startling information - it's quite understandable that people can become addicted to listening. Although the *Wireless Telegraphy Act* (and more recently the *Disclosure of Information Act.*) prohibits listening to such transmissions, it's almost impossible to prove, unless 'caught in the act'. I have heard rumours of scanners being confiscated because mobile phone frequencies were programmed into the sets - sets that have been pre-programmed by the manufacturers or importers!

There is a body of opinion that says that listening to any radio transmissions should not be illegal, and that if you want privacy, then you should take steps to scramble or encode your transmissions. One informed commentator said that 'he assumed that it was OK for the government to allow r.f. energy to pass through his body', and furthermore 'he reserved the right to listen and decode the r.f. energy to ensure that its content was not damaging to himself'. This is quite an interesting comment, but I wonder how it would stand-up in a British Court of Law?

**Sony AIR-7. Reviewed in November 1986 *Practical Wireless.***

## The Future

Who know's what the future will hold? Almost everybody has a 'wish-list' when it comes to scanners. Some people want more memory channels, some people want better organised memory channels, or even faster scan rates. Many of todays scanners have such bewildering functions that various strange 'key-presses' are required to make them perform some quite simple tasks. The competition run last year in *What Scanner* produced numerous entries, many mentioning the need for simpler operation, or better explanation in the manuals.

Personally, I would welcome a move towards better organisation of memory channels. My current scanner has 1000 memories arranged in 10 banks of 100. I would much rather have 20 banks of 50 memories each. Whenever I use my scanner, I never have need to use all 100 memories in any bank, but I frequently wish that I had more 'banks' to use. My scanner is used almost exclusively to listen to v.h.f. airband and u.h.f. airband, and it is extremely rare to find more than 20 frequencies in use at an airport. I would like to be able to leave one bank as my local airport, and use most of the other banks for the other airfields that I frequent. At the moment, I seem to spend a great deal of time 'juggling' frequencies in memory channels, just so that I can hear what's happening. Maybe, one day in the not to distant future, somebody will design a scanner so that the user can change the layout of their memory channels so suit their local listening habits.

One facility that I am quite surprised that manufacturers have not latched onto is the ability to monitor two frequencies at the same time, and to intelligently switch between the two whenever one frequency drops carrier. This would make listening to stations operating via repeaters much easier to cope with. At present, the best option is to put both frequencies into adjacent memory channels, and to manually switch between them, however, this means that you have to be next to your scanner at all times.

Whatever happens in the future, I am looking forward to it - with my scanner in my hand.

## Abbreviations

| | |
|---|---|
| r.f. | radio frequency |
| DTI | Department of Trade & Industry |
| MHz | megahertz |
| u.h.f. | ultra high frequency |
| v.h.f. | very high frequency |

# JAVIATION
## *THE AIRBAND SPECIALISTS*

The Finningley Air Show back in September saw the publication of our updated and 2nd edition combined VHF/UHF frequency guide, whilst our UHF only supplements continue to be updated approximately every 4 weeks or so. New editions will probably be produced mid October.

**NEW 2nd EDITION VHF/UHF LIST: £7.50 including p&p**
**UHF ONLY LISTING: £4.00 including p&p**

From the comments we receive I would like to think that our guides are the most comprehensive and accurate listings available, if you are not familiar with them then please give them a try, we are sure you will find them both informative & interesting. They include airfield, en-route ATCC centres, Range, Ops, Display and other frequencies whilst also giving Stud/channel tie ups.

## LEATHER CARRY CASES

We have real, yes *real* leather carry cases available for the Yupiteru VT-225, MVT-5000 and AOR/Fairmate AR1000/2000 series.

**All the same price**
**£14.99 each.**

If you don't like the smell of leather please don't buy one as we have had one returned by the purchaser as it smelt too much like leather!!

**Javiation, Carlton Works, Carlton Street,**
**BRADFORD, West Yorkshire, BD7 1DA**
**Telephone: 0274-732146 Facsimile: 0274-722627**

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**Communication Specialists**

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- ★ Branches throughout the North East
- ★ Mail order available

**32 Russell Way, Gateshead Metro Centre,**
**Tyne & Wear, NE11 9YZ**

Open: Mon–Fri 10am-8pm Sat 9am–7pm Thurs late night 10am–9pm

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Near the UCI Cinema
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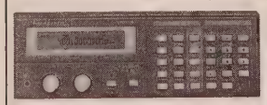

**400 Channel with Hyper Scan**
- **Hyper Scan doubles the scanning speed – 13 or 26 channels per second**
- **Covers 25-520, 760-1300MHz**

**Realistic PRO-2006** – Features ten 40-channel memory banks, a 10 channel monitor bank for temporary storage, plus search and favourite channel priority functions. Sound squelch control prevents lock-ups on unmodulated carriers. Back-lit LCD display with dimmer. AM, FM-narrow and FM-wide modes. Jacks: tape out, 3.5mm headphone, external DC power and BNC aerial input. Memory back-up requires 9v battery. Measures 76x222x209mm. Mains operation (or 12 VDC cord, extra). 20-9145 ..... **£329.95**

**FAIRMATE HP2000**
Continuous freq. Coverage from 100kHz to 1300MHz
- 1000 Channels of memory
- Keypad or rotary control
- AM, FM and wide FM modes
- Search steps from 5kHz to 995kHz

*Every set comes complete with:-* Full set of high power ni-cads, 2 antennas, carrying case, earphone. DC cable, belt clip, strap and charger. **£269**

**MVT 7000 Handheld**
The latest in a family of three!
- Frequency coverage from 8 to 1300MHz (100kHz-1300MHz at reduced sensitivity)
- 200 Memory channels
- Rotary or keypad frequency control
- AM/FM narrow and wide FM modes
- Large easy read display with signal meter.

*Every set comes complete with:-* Full set of high power ni-cads, telescopic antenna, 240Vac mains charger, DC power lead and carry strap. ..... **£319**

NEVADA AUTHORISED DEALERS Tandy AUTHORISED DEALERS ALSO CB RADIO STOCKISTS Access VISA **Part exchange welcome/Mail order Call John G1FEK or Val G1HQB**

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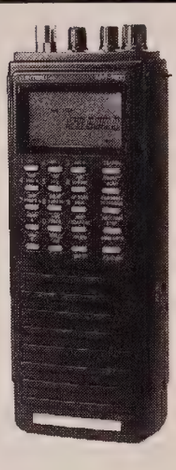
# Scanning Receivers

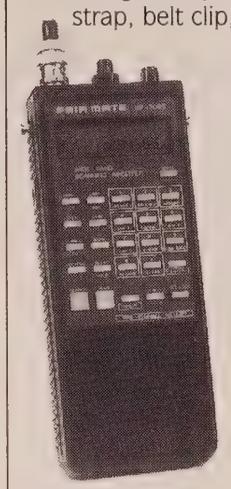
## MVT 7000



- 100kHz to 1300MHz, continuous coverage
- 200 programmable channels
- Search and scan facilities
- AM, FM and WBFM modes
- 10 programmable bands
- Excellent sensitivity
- LC display with signal strength meter
- Supplied with ni-cad batteries, mains charger/adaptor, telescopic aerial, carry strap, belt clip, 12Vdc lead and manual.

**£289.00** 40-17000

## HP2000



- Continuous tuning from 500kHz to 1300MHz
- 1000 programmable channels
- Search and scan facilities
- AM, FM and WBFM modes
- 10 programmable bands
- Supplied with telescopic, UHF and VHF antennae, ni-cad batteries, carrying case, dc cable, mains charger/adaptor and manual.

**£269.00** 40-31001

## VT225

- Civil and military airband receiver
- Covers 108 to 391MHz in 3 bands
- AM and FM modes
- 100 programmable channels
- Scan and search facilities
- LC display with signal meter
- Supplied with ni-cad batteries, mains charger/power supply, rubber duck antenna, carry strap, belt clip, 12Vdc lead and manual.

**£229.00** 40-00225

## VT125UK

- VHF, AM Airband receiver
- Covers 108 to 142MHz
- 30 programmable channels
- LC display with signal meter
- Supplied with ni-cad batteries, mains charger/power supply, rubber duck antenna, carry strap, 12Vdc lead and manual

**£149.00** 40-00125

**Full details of all the above are included in our comprehnsive catalogue, £1.70 (plus 30p p&p)**
**All the above are currently in stock and available for immediate delivery. Standard p&p £1.40, next day delivery £4.60.**

*All prices include VAT (at 17.5%)*

## Cirkit

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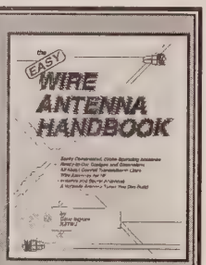
**by Dave Ingram K4TWJ**

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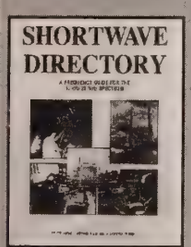


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Access

# Where Do You Stand? - The Scanning Debate

**Hands up those readers who know that scanning is illegal? No ifs or buts - it is strictly against the law - as John Griffiths explains in this article.**

Does this then make each of us owning a scanning radio - or, indeed, a short wave receiver - a criminal? Unfortunately, the answer is yes, it does. However, as we will see, you will not have MI6, MI5 or Special Branch crashing through your door at 2am - unless, of course....!

The whole business of radio is governed by such laws as *The Wireless Telegraphy Act, 1949, The Interception of Communications Act 1985* and - at least up to now - a Statutory Instrument (which is a regulation and **not** a law, at least, not yet!) known as *The Wireless Telegraphy Apparatus (Receivers) (Exemption) Regulations*, the latter being known to the boys and girls at the DTI as *SI 1989/123*.

In short, without getting too technical, this means we **can** listen to authorised broadcasts and licensed radio amateurs - but **not** TV signals! However, if you have a TV licence I'd think that the reception of such things would be no problem! So, by now, you'll have understood that such things as aircraft, ships, taxi-cabs, the emergency services and all manner of utility transmissions are illegal. That is, **it is a criminal offence to listen into such things** - though I would hazard a guess that prosecution would be unlikely unless someone really did stand on someone's toes .... like the recent HRH Princess of Wales 'alleged' conversation. Now the chap who did that is in it up to his neck! Fans of Cellnet telephone calls are the main perpetrators of scandal whenever scanners are mentioned.

From my own point of view I find the eavesdropping on telephone calls odious and very childish - but that's my view. I do not have the facility to listen into such calls anyway, but people still do it. **Beware if you are one of them.** Under *The Interception of Communications Act 1985*, the only people allowed to listen to such calls are those authorised to do so by a warrant issued by the Secretary of State - and I would suggest that national security would have to be involved before such a document would be issued, making it highly unlikely that anyone like us would ever get the permission to do so. If you are caught - and 'caught' means taping them, logging the conversation and frequency - and if you have them in the memory banks of the scanner, please read the following carefully: '....a person who intentionally intercepts a communication in the course of its transmission by post or by means of a public telecommunications system shall be guilty of an offence and liable to (a) on summary conviction, to a fine not exceeding the maximum or (b) on conviction or indictment, to imprisonment **for a term not exceeding two years or** to a fine or to both."

Broadly speaking, if you're listening to Cellnet calls then **you** are **breaking the law**. End of story.

## Harmless Fun

However, those of us who monitor other transmissions can be pacified somewhat by the knowledge that scanning is viewed as harmless fun by most of the authorities - at least, until the supposed invasion of Princess Diana's call. That single act may well have shoved us into the front line and, as a result, we could very well find that we will become eligible for prosecution if we continue to be as open about our hobby as we have been.

Whilst I cannot see the Radiocommunications Agency authorising a party of toughs to smash some scanner owner's front door down because he's listening to Marine v.h.f. Channel 16, I can see those frequencies allocated to public bodies like the Police becoming secure - and those who monitor them, and are caught doing so, being charged as a deterrent to others. High-tech criminals have been known to use scanners to organise things like drug shipments or robberies as the intelligence they can gather from a scan will allow them to know who is where and when. In actual fact, such a fact may well cause the Police to invoke a clause such as 'being equipped to commit a crime.'

Let's face it - if you have the local constabulary's radio channels in your scanner memory, what evidence can you put before a judge that will make him see you as an enthusiast? Zero! If any of you have these channels in the memories, and are 'mobile', then take great care! Who knows what instructions are being issued by Chief Constables nowadays regarding scanners in their areas?

Rest easy, though, that the previous charge would apply to someone walking around with a scanner in their hand rather than an armchair enthusiast in the comfort of his own home. For mobiles read hand-helds. If you want to avoid this, I'd suggest that you memorise the frequencies in your own memory bank - the one between your ears - rather than in those of the machine! Seizure of a scanner can take place under *Section 5(b)* of the 1949 *Wireless Telegraphy Act*, if such seizure is ordered by a court and on conviction. That took effect in January of 1991 - and not a lot of people know that. A horror story, indeed?

Well, in point of fact the regulations are there to safeguard such messages that are, in principle, only intended to be sent between two stations and for their use. Intercepting them - for whatever reason - is illegal. How would you like it if someone listened in on a conversation of yours without your knowledge? Not nice, is it?

## Harmless

The truth is that what we are doing is, from an enthusiast's point of view at least, harmless. That is to say, we listen to them for our own benefit. The law becomes a threat when we pass on what we've heard, or use that information for our own uses. That's the be all and end all of it. Obviously there will be those who will see the scanner, which is a high-tech tool in the 'right' hands, as a godsend. Criminals, gutter press journalists who want a story at any cost and those individuals who think that interception of such calls or radio messages can benefit them financially by passing them on. Those folk are the ones who may well have given the powers-that-be food for thought after the last press story concerning Cellnet calls and the ease with which Joe Public can break into them.

## Harmony

I can only suggest that new Acts may be requested which will limit scanners to certain portions of the radio spectrum for general useage, and those who, like me, use them as a tool in harmony with existing radio equipment, may well have to prove that we need them. In my case, as a member of the RNLI, I use my set as a marine monitor on Channel 16. Should any vessel request lifeboat help I can plot her on a chart I have on the wall, see how close she is to my own station - and be out of the door and on my way to the lifeboat **before** my pager is activated by the Coastguard. I am, also, not the only one to use this 'self-invented' system and it's fair to say many more lifeboat and other emergency services people use their scanners in a similar way.

It is my own opinion that such a measure improves response time - though it is **not** sanctioned by the RNLI - and can only serve the public interest. That's my theory anyway. However, as I said before, it may come to pass that the use of scanners may well be tightened up because of idiotic folk who 'misuse' the radio spectrum. When that happens it is also my contention that we will all be classed as being in the same boat. After nearly ten years 'on the radio' as a listener, that will be a sad day for me indeed.

# WHAT SCANNER

## Fairmate HP-200

**TYPE**: hand-held
**COVERAGE**: 500kHz-1300MHz
**MODES**: a.m., f.m., w.b.f.m.
**SENSITIVITY**: below 2MHz less than 10µV for 20dB, 15-500 & 800-1300MHz less than 0.5µV for 12dB SINAD f.m., 15-600MHz less than 2µV for 20dB a.m. 60% modulation, 15-600MHz less than 3µV for 30dB S/N w.b.f.m.
**RESOLUTION**: 5-995kHz selectable
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: more than 100mW for 10% t.h.d.
**SCAN RATE**: 20 channels per second
**SEARCH RATE**: less than 40 channels per second
**MEMORIES**: 1000 in 10 x 100 channels
**FEATURES**: NiCads, carry case, shoulder strap, belt clip, d.c. cable, earpiece, three antennas and charger
**REVIEWED**:
**PRICE**: £269

## AOR AR2000

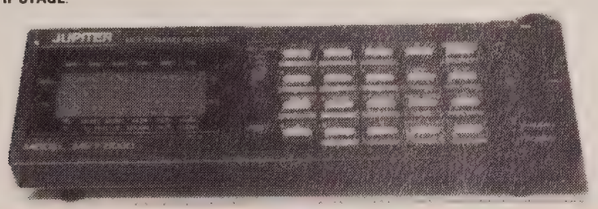
**TYPE**: portable
**COVERAGE**: 500kHz-1300MHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: n.b.f.m. approx 0.5µV @ 12dB SINAD across most of range; a.m. approx 3µV @ 10dB S/N across most of range
**RESOLUTION**: 5/12.5kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: >100mW @ 10% distortion
**SCAN RATE**: up to 20 channels per second
**SEARCH RATE**: up to 40 steps per second
**MEMORIES**: 1000 in 10 x 100 channels
**FEATURES**: supplied with single wide-band whip antenna, a.c. charger, NiCads, 12V d.c. lead fitted with cigar lighter plug, soft case with carry strap and belt hook.
**REVIEWED**:
**PRICE**: £259

## Yupiteru MVT-7000

**TYPE**: hand-held
**COVERAGE**: 8-1300MHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: n.b.f.m. >0.5µV for 12dB SINAD, w.b.f.m. 0.75µV for 12dN SINAD, a.m. 0.5µV for 10dB S/N
**RESOLUTION**: 5/10/12.5/25/50/100kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 120mW into 8Ω
**SCAN RATE**: 16 channels per second
**SEARCH RATE**: 20 steps per second
**MEMORIES**: 200
**FEATURES**: variable display contrast, ten user-defined search patterns
**REVIEWED**: August 1991 *Short Wave Magazine*
**PRICE**: £289

## Yupiteru MVT-6000

**TYPE**: base/ mobile
**COVERAGE**: 25-550 & 800-1300MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 25-550MHz f.m. 0.5µV 12dB SINAD, 800-1300MHz f.m. 0.8µV 12dB SINAD, a.m. 0.7µV 10dN S/N
**RESOLUTION**: 5/10/12.5/25 or 30kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**:
**SCAN RATE**:
**SEARCH RATE**: 8 or 20 steps per second
**MEMORIES**: 100 in 5 x 20 channels
**FEATURES**: selective bank scanning, NiCads, telescopic whip, carry case & strap, belt clip
**REVIEWED**:
**PRICE**: £299



## Yupiteru VT-125UK

**TYPE**: airband hand-held
**COVERAGE**: 108-142MHz
**MODES**: a.m.
**SENSITIVITY**: >0.5µV
**RESOLUTION**: 25/50kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 60mW into 8Ω
**SCAN RATE**: 20 channels per second
**SEARCH RATE**:
**MEMORIES**: 30
**FEATURES**: l.c.d. signals meter, l.c.d. backlight
**REVIEWED**: August 1991 *Short Wave Magazine.*
**PRICE**: £179

## AOR AR2800

**TYPE**: base/mobile
**COVERAGE**: 500kHz-600MHz & 800-1300MHz
**MODES**: a.m., n.b.f.m., w.b.f.m., u.s.b., l.s.b., c.w.
**SENSITIVITY**: n.b.f.m. approx 0.5µV @ 12dB SINAD, a.m. approx 3µV @ 10dB S/N across most of range
**RESOLUTION**: 5kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**:
**SCAN RATE**: up to 20 channels per second
**SEARCH RATE**: up to 20 steps per second
**MEMORIES**: 1000 in 10 x 100 channels
**FEATURES**: supplied with a.c. power supply, whip antenna, d.c. lead, mobile mount, manual and fitted with internal NiCad battery pack
**REVIEWED**:
**PRICE**: £395

## Yupiteru MVT-5000

**TYPE**: hand-held
**COVERAGE**: 25-550 & 800-1300MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 25-550MHz f.m. 0.5µV 12dB SINAD, 800-1300MHz f.m. 0.8µV 12dB SINAD, a.m. 1.5µV 10dN S/N
**RESOLUTION**: 5/10/12.5/25 or 30kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**:
**SCAN RATE**:
**SEARCH RATE**: 8 or 20 steps per second
**MEMORIES**: 100 in 5 x 20 channels
**FEATURES**: selective bank scanning, NiCads, telescopic whip, carry case & strap, belt clip
**REVIEWED**:
**PRICE**: £229

## Fairmate HP-1000AB

**TYPE**: hand-held
**COVERAGE**: 108-143, 220-400MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: a.m. better than 0.25µV for 10dB S+N/N, f.m. better than 0.25µV for 12dB SINAD
**RESOLUTION**: 5-995kHz in multiples of 5 or 12.5kHz
**IMAGE REJECTION**: better than -75dB
**IF STAGE**:
**AUDIO OUTPUT**: 100mW for 10% or less t.h.d.
**SCAN RATE**: over 20 channels per second
**SEARCH RATE**:
**MEMORIES**: 1000
**FEATURES**:
**REVIEWED**:
**PRICE**: £229

## Shinwa SR001

**TYPE**: base/mobile
**COVERAGE**: 25-999.995MHz
**MODES**: a.m., w.b.f.m., n.b.f.m.
**SENSITIVITY**: -4dBµV or lower (12dB SINAD)
**RESOLUTION**: 5/10/12.5/20/25/50/100kHz
**IMAGE REJECTION**: 48.5dB
**IF STAGE**:
**AUDIO OUTPUT**: 2W into 4Ω
**SCAN RATE**: over 20 channels per second
**SEARCH RATE**: (v.f.o.) 35 channels per second
**MEMORIES**: 200 in 20 x 10 channels
**FEATURES**:RS-232C port, wireless remote controller, up to three option units can be incorporated including the external ROM
**REVIEWED**:
**PRICE**: £299

## Nevada MS 1000

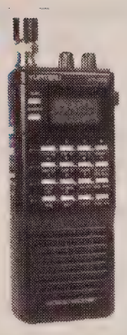
**TYPE**: mobile/base
**COVERAGE**: 500kHz-600MHz & 800-1300MHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: a.m. 500kHz-2MHz - 10µV 20dB; a.m. 0.7-1µV @ 10dB S/N; f.m. 0.5µV @ 12dB SINAD, w.b.f.m. 1µV @ 20dB S/N, high band f.m. 0.7-1µV @ 12dB SINAD
**RESOLUTION**: 5/12.5kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 500mW or more
**SCAN RATE**: 20 channels per second
**SEARCH RATE**: 20 steps per second
**MEMORIES**: 1000 in 10 x 100 channels
**FEATURES**: user selectable search steps from 5-995kHz, selectable 10dB attenuator, keypad or rotary control, all metal case.
**REVIEWED**: May 1991 *Short Wave Magazine*
**PRICE**: £279

## Realistic PRO-2006

**TYPE**: base/mobile
**COVERAGE**: 25-520 & 760-1300MHz
**MODES**: a.m., w.b.f.m., n.b.f.m.
**SENSITIVITY**: w.b.f.m. 3µV for 25-520 & 760-1100MHz, 10µV for 1100-1300MHz; n.b.f.m.3µV; a.m. 2µV 25-520 & 760-110MHz, 5µV for 1100-1300MHz
**RESOLUTION**: 5/12.5/50kHz
**IMAGE REJECTION**: 60dB
**IF STAGE**:
**AUDIO OUTPUT**: 1.3W nominal
**SCAN RATE**: 26 or 13 channels per second
**SEARCH RATE**:
**MEMORIES**: 400 in 10 x 40 channels
**FEATURES**:
**REVIEWED**: February 1991 *Short Wave Magazine*
**PRICE**: £330

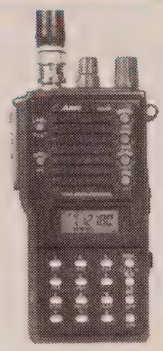
# WHAT SCANNER

## Yupiteru VT-225



**TYPE**: Hand-held
**COVERAGE**: 108-142.0, 149.5 - 160.0 & 222.0 - 3911.0MHz
**MODES**: a.m. & n.f.m.
**SENSITIVITY**: On a.m. 0.5µV gives 10dB S/N, and on f.m. 0.5µV gives 12dB SINAD
**RESOLUTION**: 10, 12.5, 25, 50 & 100kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 100mW @ 10% distortion
**SCAN RATE**:
**MEMORIES**: 100 (10 banks of 10)
**REVEIWED**: *SWM* April 1992
**PRICE**: £229

## Alinco DJ-X1D



**TYPE**: Hand-held
**COVERAGE**: 0.5-1300MHz
**MODES**: a.m. & n.f.m./w.f.m.
**SENSITIVITY**: On n.f.m. 0.12µV for 12dB SINAD,
**RESOLOLUTION**: 5, 9, 10, 12.5, 20, 25, 30, 50, 50 & 100kHz steps
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 150mW @ 10% distortion
**SCAN RATE**:
**MEMORIES**: 100 + call channel
**FEATURES**: Multiple scan and search functions, battery auto save and auto-off functions, l.c.d. screen with backlight lamp (with auto turn-on facility). Also squelch-defeat and key-beep and controls lock facility.
**REVIEWED**: *SWM* October 92 (DJ-X1)
**PRICEv** £249

## AOR AR 1500

**TYPE**: Hand-held
**COVERAGE**: 500kHz-1300MHz
**MODES**: w.f.m., n.b.f.m., a.m. and s.s.b. (u.s.b., l.s.b., c.w.) with the b.f.o. switched in.
**SENSITIVITY**: In n.b.f.m. about 0.8µV @12dB SINAD over most of the range. Aproximately 3µV on a.m. for 10dB S/N over most of the range. For s.s.b. about 1.5µV @ 10dB S/N over most of the range
**RESOLUTION**: 5-995kHz steps in 5 or 12.5kHz steps (in s.s.b. mode the b.f.o. is tuneable -4 + 6kHz).
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 100mW minimum @10% distortion
**SCAN RATE**: 20 steps per second approximately.
**MEMORIES**: 1000 (10 *x* 100) arranged 900 + 100 for 'auto-memory'.
**FEATURES**: Versatile scanning modes including 'auto memory' mode. Memory bank 9 is for 'auto-memory', l.c.d. screen with backlight facility, squelch, local/remote sensitivity switch, 50Ω BNC antenna socket. Supplied with v.h.f./u.h.f. whip, and 5m short wave antennas, NiCad pack and charger, dry battery case, 12V auto power lead, soft case, belt-hook and earphone included with the manual.
**REVIEWED**:
**PRICE**: £279

## NOTICE TO TRADERS

If youv'e got a scanner not covered in our guide, let us know so we can make this feature as comprehensive as possible.

## NOTICE TO READERS

Please check current prices of all goods mentioned here before buying. The current exchange rates may affect prices.

## Yupiteru MVT-8000

**TYPE**: Base / mobile
**COVERAGE**: 100kHz -1300MHz
**MODES**: a.m. n.f.m./w.f.m.
**SENSITIVITY**: 0.5µV for 10dB S/N on a.m., 0.5µV for 12dB SINAD on n.f.m.(<1µV above 1000MHz) & 0.75µV of w.f.m. for 12dB SINAD.
**RESOLUTION**: 5, 10, 12.5, 25, 50 & 100kHz steps (a.m. /n.f.m), 50 or 100kHz steps on w.f.m.
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**:
**SCAN RATE**: 15-20 steps per second.
**MEMORIES**: 200
**REVIEWED**:
**PRICE**: £299

## Signal R-550

**TYPE**: Hand-held
**COVERAGE**: 108-142MHz
**MODES**:
**SENSITIVITY**: <0.5µV for 12dB SINAD
**RESOLUTION**: 5, 25 or 100kHz steps
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**:
**SCAN RATE**:
**MEMORIES**: 40 (four banks of 10)
**REVIEWED**:
**PRICE**: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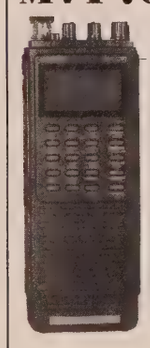

- 100kHz - 1300MHz No Gaps!
- 200 Memories in 10 Banks
- WBFM/NBFM/AM Selectable
- Dual Speed Scanning
- Variable Contrast Display
- Battery Saver
- Programmable Steps
- Signal Strength Bar Meter
- Superb Sensitivity
- 4 x AA Ni-cads Supplied
- AC240 Volts charger
- Cigar 12V Power Lead
- External 12V Socket
- Telescopic Whip
- Illuminated Display

### MVT-5000 £199

- 25 - 550/800 - 1300MHz
- 100 Memories in 5 Banks
- NBFM/AM Selectable
- Dual Speed Scanning
- Fast Band Search
- Battery Saver
- Programmable Steps
- Carrier/Audio Scan
- Excellent Sensitivity
- Power from 4 x AA cells
- External 12V Socket
- Telescopic Whip
- Carry Strap

### ALINCO's

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|---|---|
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- 142 - 170MHz
- 30 Memories
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- Priority Channel
- Memory Lockout
- Steps 10 - 12.5 - 25kHz
- Superb Weak Signal Reception
- Illuminated Display
- Power from 3 x Ni-cads
- 12V Cigar charger/supply lead
- BNC Helical Antenna & Strap
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# WHAT SCANNER

## Realistic PRO-38

**TYPE**: hand-held
**COVERAGE**: 68-88, 136-174, 406-512MHz
**MODES**: f.m.
**SENSITIVITY**: 68-88MHz = 0.5µV normal, 2µV limit; 136-174MHz = 0.7µV normal, 3µV limit; 406-512MHz = 0.7µV normal, 4µV limit
**SELECTIVITY**: At 155MHz -6dB = ±10kHz, -50dB = ±17kHz
**RESOLUTION**:
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: nominal 260mW
**SCAN RATE**: 10 channels per second
**SEARCH RATE**:
**MEMORIES**: 10
**FEATURES**: Keyboard lock switch, l.c.d. channel readout, jack for earphone, belt clip and flexible antenna supplied.
**REVIEWED**: *Short Wave Magazine* October 1988 (£1.65 back issue)
**PRICE:** £80

## AOR AR2001

**TYPE**: base station
**COVERAGE**: 25-550MHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: n.b.f.m. = 0.39µV @ 12dB SINAD @ 70MHz
**SELECTIVITY**: n.b.f.m. = ±13kHz @ 6dB, ±21kHz @ 70dB, w.b.f.m. = ±180kHz @ 6dB, ±446kHz @ 70dB, a.m. = 13.5kHz @ 6dB
**RESOLUTION**: 5, 12.5, 25kHz
**IMAGE REJECTION**: -50dB
**IF STAGE**: 750MHz, 455kHz
**AUDIO OUTPUT**: 1W @ 10% t.h.d.
**SCAN RATE**: 5 channel per second
**SEARCH RATE**: 6 seconds per MHz
**MEMORIES**: 20
**FEATURES**:
**REVIEWED**: *Practical Wireless* May 1984 (£1.65 back issue)
**PRICE:** Available second-hand

## Uniden Bearcat 70XLT

**TYPE**: hand-held
**COVERAGE**: 29-54, 135-174, 406-512MHz
**MODES**: f.m., a.m.
**SENSITIVITY**: 29-54MHz = 0.4µV, 136-174MHz = 0.5µV, 406-512MHz = 0.7µV
**SELECTIVITY**: -55dB @ ±25kHz
**RESOLUTION**: 5kHz
**IMAGE REJECTION**: -50dB
**IF STAGE**: 10.8MHz
**AUDIO OUTPUT**: 140mW at 10% t.h.d. into 8Ω
**SCAN RATE**: 15 channels per second
**SEARCH RATE**: 15 channels per second
**MEMORIES**: 20
**FEATURES**:
**REVIEWED**:
**PRICE:** £200*

## Realistic PRO-2004

**TYPE**: base/mobile station
**COVERAGE**: 25-520, 760-1300MHz
**MODES**: a.m, w.b.f.m., n.b.f.m.
**SENSITIVITY**: w.b.f.m. 25-520 & 760-110MHz = 3µV, 1100-1300MHz = 10µV all @ 30dB S/N @ 22.5kHz; n.b.f.m. 25-520MHz = 0.5µV, 760-1300MHz = 0.3µV all at 20dB S/N @ 3kHz dev; a.m. 25-520 & 760-1100MHz = 2µV, 1100-1300MHz = 3µV all at 20dB s/n @ 60%
**SELECTIVITY**: n.b.f.m. & a.m. ±9kHz @ -6dB, ±15kHz @ -50dB; w.b.f.m. ±150kHz @ -6dB, ±300kHz @ -50dB
**RESOLUTION**: 5, 12.5 or 50kHz
**IMAGE REJECTION**: -60dB
**IF STAGE**: 611.5-607.505MHz, 48.5MHz, 455kHz (a.m.)
**AUDIO OUTPUT**: 1.8W @ 3% t.h.d.
**SCAN RATE**: 8 or 16 steps per second
**SEARCH RATE**: 8 or 16 steps per second
**MEMORIES**: 300
**FEATURES**: Lock-out key, squelch, priority function key and large l.c.d. read-out
**REVIEWED**: *Short Wave Magazine* April 1987 (£1.65 back issue)
**PRICE:** £330*

## Uniden Bearcat 50XL

**TYPE**: hand-held
**COVERAGE**: 29-54, 136-174, 406-512MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 29-54MHz = 0.4µV, 136-174MHz = 0.5µV, 406-512MHz = 0.7µV for 12dB SINAD
**SELECTIVITY**: -55dB ±25kHz
**RESOLUTION**: 5kHz
**IMAGE REJECTION**: -50dB
**IF STAGE**: 10.8MHz
**AUDIO OUTPUT**: 500mW at 10% t.h.d. in 8Ω
**SCAN RATE**: 15 channels per second
**SEARCH RATE**: 15 channels per second
**MEMORIES**: 10
**FEATURES**:
**REVIEWED**:
**PRICE:** £99

## AOR AR-2002

**TYPE**: base/mobile station
**COVERAGE**: 25-550, 800-1300MHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: n.b.f.m. = 0.3µV, w.b.f.m. = 1.0µV both @ 12dB SINAD; a.m. = 0.5µV @ 10dB S/N
**SELECTIVITY**: n.b.f.m. ±7.5kHz @ 6dB, w.b.f.m. ±250kHz @ 60dB, a.m. = ±10kHz @ 70dB
**RESOLUTION**: 5, 12.5, 25kHz
**IMAGE REJECTION**: -50dB
**IF STAGE**: 750, 45.03MHz (w.b.f.m.), 455kHz (n.b.f.m./a.m.)
**AUDIO OUTPUT**: 1W @ <10% distortion
**SCAN RATE**: 5 channels per second
**SEARCH RATE**: 6 seconds per MHz
**MEMORIES**: 20
**FEATURES**: Tuning knob plus keypad, real-time clock, computer control facilities
**REVIEWED**: *Practical Wireless* December 1985 (85p photocopy)
**PRICE:** £487

## Revco RS-2000E

**TYPE**: base station
**COVERAGE**: 60-179, 380-520MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: v.h.f. f.m. = 0.5µV, u.h.f. f.m. = 1.0µV
**SELECTIVITY**: -60dB @ ±25kHz
**RESOLUTION**: 5kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 2W
**SCAN RATE** 5 or 10 channels per second
**SEARCH RATE**: 5 or 10 channels per second
**MEMORIES**: 70
**FEATURES**: Autio search and store
**REVIEWED**:
**PRICE:** £279*

## Uniden Bearcat UBC-175XL

**TYPE**: base station
**COVERAGE**: 66-88, 118-174, 406-512MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 29-54 & 136-174MHz = 0.3µV, 406-512MHz = 0.5µV, 118-136MHz = 0.8µV @ 12dB SINAD
**SELECTIVITY**: -45dB @ ±25kHz
**RESOLUTION**: 5kHz
**IMAGE REJECTION**: -55dB
**IF STAGE**: 10.85MHz, 450kHz
**AUDIO OUTPUT**: 800mW @ 10% t.h.d.
**SCAN RATE**: 5 or 15 channels per second
**SEARCH RATE**: 5 or 15 channels per second
**MEMORIES**: 16
**FEATURES**: priority scan, channel lockout, auto squelch, short term memory back-up, wood veneer case
**REVIEWED**: *Short Wave Magazine* December 1987 (£1.65 back issue)
**PRICE:** £170

## JIL SX-200N

**TYPE**: mobile/base station
**COVERAGE**: 26-88, 108-180, 380-514MHz
**MODES**: a.m., n.b.f.m.
**SENSITIVITY**: f.m. = > 60dB @ ±25kHz, a.m. = >60dB at ± 10kHz
**SELECTIVITY**: 26-180MHz f.m. = 0.4µV, 380-514MHz = 1.0µV both at 12dB s/n, 26-180MHz a.m. = 1.0µV at 10dB s/n, 380-514MHz a.m. = 2.0µV
**RESOLUTION**: 5, 12.5kHz
**IMAGE REJECTION**:
**IF STAGE**: 10.7MHz, 455kHz
**AUDIO OUTPUT**: 2W
**SCAN RATE**: 4 or 8 channels per second
**SEARCH RATE**: 5 or 10 channels per second
**MEMORIES**: 16
**FEATURES**:
**REVIEWED**: *Practical Wireless* October 1981 (£1.65 back issue)
**PRICE:** £325*

## Yaesu FRG-9600

**TYPE**: base station
**COVERAGE**: 60-905MHz (up to 460MHz for s.s.b.)
**MODES**: n.b.f.m., w.b.f.m., n.b.a.m., w.b.a.m., s.s.b.
**SENSITIVITY**: n.b.f.m. = 0.5µV, w.b.f.m. = 1.0µV both @ 12dB SINAD, n.b.a.m. = 1.0µV, w.b.a.m. = 1.5µV both @ 10dB S+N/N, s.s.b. = 1.0µV @ 15dB S+N/N
**SELECTIVITY**: n.b.f.m. ±15kHz, w.b.f.m. ±180kHz, n.b.a.m. ±2.4kHz, w.b.a.m. ±6kHz, s.s.b. ±2.4kHz all @ 3dB
**RESOLUTION**: 100Hz, 1, 5, 10, 12.5, 25 or 100kHz depending on mode
**IMAGE REJECTION**: 60-460MHz = -50dB, 460-905MHz = -40dB
**IF STAGE**: 45.754, 10.5MHz & 455kHz
**AUDIO OUTPUT**: 1W into 8Ω with less than 10% t.h.d.
**SCAN RATE**: not given
**SEARCH RATE**:
**MEMORIES**: 100
**FEATURES**: 0.6m whip antenna, 1.8m d.c. power cable, mobile mounting bracket & wire stand.
**REVIEWED**:
**PRICE:** £500

## AOR AR2500

**TYPE**: base/mobile
**COVERAGE**: 5-550MHz & 800-1300MHz
**MODES**: a.m., n.b.f.m., w.b.f.m., u.s.b., l.s.b., c.w.
**SENSITIVITY**: n.b.f.m. approx 0.45µV @ 12dB SINAD, w.b.f.m. approx 1µV @ 12dB SINAD, a.m. approx 1µV @ 10dB S/N across most of range
**RESOLUTION**: 5kHz
**IMAGE REJECTION**:
**IF STAGE**
**AUDIO OUTPUT**: 500mW in 8Ω @ 10% t.h.d.
**SCAN RATE**: up to 36 channels per second
**SEARCH RATE**: up to 36 steps per second
**MEMORIES**: 1984 as 62 x 32 channels
**FEATURES**: 16 search banks, RS232 socket for computer control, supplied with a.c. power supply, whip antenna, d.c. lead, mobile mount and manual
**REVIEWED**:
**PRICE**: £419

## JIL SX-400

**TYPE**: base station
**COVERAGE**: 26-520MHz (100kHz-1.4GHz with converters)
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: v.h.f. f.m. = 0.5µV u.h.f. f.m. = 0.5µV both @ 12dB S/N; v.h.f. a.m. = 1.0µV, u.h.f. a.m. = 2.0µV both @ 10dB S/N
**SELECTIVITY**: f.m. = 60dB @ ±15kHz, a.m. = 60dB @ ±10kHz both with S/N 45dB
**RESOLUTION**: 5, 6.25, 10, 12.5kHz
**IMAGE REJECTION**: v.h.f. = 50dB
**IF STAGE**: 10.7MHz, 455kHz
**AUDIO OUTPUT**: 2W into 4Ω load
**SCAN RATE**: 4 or 8 channels per second
**SEARCH RATE**: 5 and 10 channels per second
**MEMORIES**: 20
**FEATURES**:
**REVIEWED**:
**PRICE:** £650*

## Uniden Bearcat 100XL

**TYPE**: hand-held
**COVERAGE**: 66-88, 118-174, 406-512MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 30-50MHz = 0.3µV, 118-136MHz = 0.8µV, 136-174MHz = 0.4µV, 406-512MHz = 0.5µV for 12dB SINAD
**SELECTIVITY**: 50dB at ± 25kHz
**RESOLUTION**: 5kHz
**IMAGE REJECTION**: -50dB
**IF STAGE**: 10.8MHz
**AUDIO OUTPUT**: 300mW at 10% t.h.d.
**SCAN RATE**: 15 channels per second
**SEARCH RATE**: 25 frequencies per second
**MEMORIES**: 16
**FEATURES**: Priority channel, keyboard lock, auto squelch, battery low indicator, back-lit display
**REVIEWED**:
**PRICE:** £190*

## Realistic PRO-32A

**TYPE**: hand-held
**COVERAGE**: 68-88, 108-136 (a.m.), 138-174, 380-512MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 68-88MHz = 0.6µV, 138-174MHz & 380-512MHz = 1.0µV f.m. 20dB S/N at 3kHz deviation; 108-136MHz = 2µV a.m. 20dB S/N at 60% modulation
**SELECTIVITY**: -6dB @ ±9kHz, -60dB @ ±15MHz
**RESOLUTION**: 5, 12.5 or 25kHz
**IMAGE REJECTION**:
**IF STAGE**: 455kHz, 10.7MHz
**AUDIO OUTPUT**: 300mW
**SCAN RATE**: 4 or 8 channels per second
**SEARCH RATE**: 4 or 8 channels per second
**MEMORIES**: 200
**FEATURES**: lockout, delay and priority channel, helical antenna.
**REVIEWED**: *Short Wave Magazine* November 1987 (£1.65 back issue)
**PRICE** £240*

## Regency HX850E

**TYPE**: hand-held
**COVERAGE**: 75-106 or 60-90, 118-175, 406-496MHz
**MODES**: a.m., n.b.f.m.
**SENSITIVITY**: v.h.f. f.m. = 0.7µV, u.h.f. f.m. = 1.0µV both @ 12dB SINAD, v.h.f. a.m. = 1.0µV @ 10dB s/n
**SELECTIVITY**: f.m./a.m. ±7.5kHz @ 6dB
**RESOLUTION**: 5, 10 & 12.5kHz
**IMAGE REJECTION**:
**IF STAGE**: 21.4MHz, 455kHz
**AUDIO OUTPUT**: 10mW @ 10% or less t.h.d.
**SCAN RATE**: 12 channels per second
**SEARCH RATE**: u.h.f. = 7 seconds per MHz; v.h.f. = 9 seconds per MHz
**MEMORIES**: 20
**FEATURES**: NiCads, flexible antennas and 240V charger supplied.
**REVIEWED**:
**PRICE:** £280*

# WHAT SCANNER

## Black Jaguar BJ200 Mark III

**COVERAGE**: 26-30, 50-88, 115-178, 210-280, 360-520MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: f.m. = 0.5µV for h.f. & v.h.f., 0.7µV for u.h.f. all 12dB SINAD; a.m. = 1.0µV for h.f. & v.h.f., 1.5µV for u.h.f. all 10dB SINAD
**SELECTIVITY**: 60dB ±20kHz
**RESOLUTION**: 5, 10, 12.5kHz
**IMAGE REJECTION**: more than 40dB
**IF STAGE**:
**AUDIO OUTPUT**: 250mW into 8Ω
**SCAN RATE**: 10 channels per second
**SEARCH RATE**:
**MEMORIES**: 16
**FEATURES**: priority and memory lockout on scan, selectable a.m./f.m.
**REVIEWED**: *What Scanner* Autumn 1990 (with SWM)
**PRICE:** £199

## Saiko SC-1600

**TYPE**: mobile
**COVERAGE**: 10MHz within 65-90MHz, 20MHz within 130-175MHz, 30MHz within 390-500MHz
**MODES**: n.b.f.m.
**SENSITIVITY**: 1.0µV for 10dB S/N
**SELECTIVITY**: ±15kHz @ 50dB, ±7kHz @ -6dB
**RESOLUTION**: 5kHz
**IMAGE REJECTION**: -40dB
**IF STAGE**: 10.7MHz, 455kHz
**AUDIO OUTPUT**: 1.5W @ 10% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 16
**FEATURES**: Squelch, delay key, l.c.d. channel display, d.c. power cable, mounting bracket supplied
**REVIEWED**:
**PRICE:** £160*

## WIN 100

**TYPE**: hand-held
**COVERAGE**: 108-135.975MHz
**MODES**: a.m.
**SENSITIVITY**: 0.5µV @ 12dB SINAD
**SELECTIVITY**: -59dB @ 25kHz
**RESOLUTION**: 25, 50kHz
**IMAGE REJECTION**: -55dB
**IF STAGE**: 10.7MHz, 455kHz
**AUDIO OUTPUT**: 320mW at 10% t.h.d.
**SCAN RATE**: 10 channels per second
**SEARCH RATE**: 5 seconds per MHz at 25kHz steps
**MEMORIES**: 20
**FEATURES**: priority channel, display/hold, channel lockout, keyboard lock, external power and speaker jacks, display lighting
**REVIEWED**: *Short Wave Magazine* December 1988 (£1.65 back issue)
**PRICE:** £179

## Uniden Bearcat 580XLT

**TYPE**: mobile/base station
**COVERAGE**: 29-54, 118-174, 406-512MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: h.f. & v.h.f. = 0.4µV, u.h.f. = 0.5µV all @ 12dB SINAD
**SELECTIVITY**: -55dB @ 25MHz
**RESOLUTION**: 5, 10, 12.5kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 2.5W @ 10% t.h.d.
**SCAN RATE**: 15 channels per second
**SEARCH RATE**:
**MEMORIES**: 100
**FEATURES**: 2 second delay, lockout, priority scan
**REVIEWED**:
**PRICE:** £199*

## Sony AIR-7

**TYPE**: hand-held
**COVERAGE**: 150kHz-2.19MHz, 76-136, 144-174MHz
**MODES**: a.m., w.b.f.m., n.b.f.m.
**SENSITIVITY**: f.m. = 2µV @ 20dB S/N, airband = 1.25µV @ 12dB SINAD, 144-174MHz = 0.5µV @ 12dB SINAD
**SELECTIVITY**:
**RESOLUTION**: 5, 9, 10, 25 or 50kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 400mW into 8Ω
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 10
**FEATURES**: key protect, backlit l.c.d. readout, priority channel
**REVIEWED**: *Practical Wireless* November 1986 (85p photocopy)
**PRICE:** £229

## Realistic PRO-2021

**TYPE**: base/mobile
**COVERAGE**: 68-88, 108-136, 138-174, 380-512MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 66-88MHz, 138-174MHz & 380-512MHz = 1µV, 108-136MHz = 2µV
**SELECTIVITY**: -6dB @ ±9kHz, -50dB @ ±15kHz
**RESOLUTION**: 5, 12.5 & 25kHz
**IMAGE REJECTION**:
**IF STAGE**: 10.7MHz, 455kHz
**AUDIO OUTPUT**: 300mW
**SCAN RATE**: 4 or 8 channels per second
**SEARCH RATE**:
**MEMORIES**: 200
**FEATURES**: Squelch control, mobile mounting bracket included, sockets for external antenna, speaker and tape socket
**REVIEWED**: *Short Wave Magazine* August 1988 (85p photocopy)
**PRICE**: £220*

## AOR AR800E

**TYPE**: hand-held
**COVERAGE**: 75-105, 118-136, 140-174, 406-495, 830-950MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 75-105, 118-136 & 140-174MHz = 0.4µV; 406-495MHz = 0.5µV; 830-950MHz = 1µV all @ 12dN SINAD; 118-136MHz a.m. = 0.8µV @ 10dB S/N
**SELECTIVITY**: -23dB @ ±12.5kHz, -45dB @ ±25kHz
**RESOLUTION**: 5, 10, 12.5kHz (v.h.f.), 12.5kHz (u.h.f.), 25kHz (offset by 12.5kHz) on 830-950MHz
**IMAGE REJECTION**: -24dB @ 145MHz
**IF STAGE**: 21.4MHz, 455kHz
**AUDIO OUTPUT**: 140mW at 10% t.h.d.
**SCAN RATE**: 13 channels per second
**SEARCH RATE**: 7.5 seconds per MHz at 12.5kHz steps
**MEMORIES**: 20
**FEATURES**: NiCad battery pack and charger supplied, two helical antennas, illuminated l.c.d. readout and delay/hold function
**REVIEWED**:
**PRICE:** £169

## Kenwood RZ-1

**TYPE**: base/mobile station
**COVERAGE**: 500kHz-905MHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: a.m. = 5µV @ 10dB S/N, n.b.f.m. = 6µV @ 12dB SINAD, 60-905MHz = 3µV, w.b.f.m. = 1µV
**SELECTIVITY**:
**RESOLUTION**: 5, 12.5, 20, 25kHz
**IMAGE REJECTION**:
**IF STAGE**: 45.75, 10.7MHz
**AUDIO OUTPUT**: 2W into 8Ω @ 5% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 100
**FEATURES**: text store feature, picture symbols available on display
**REVIEWED**: *Short Wave Magazine* April 1988 (£1.65 back issue)
**PRICE:** £459

## Sony ICF PRO-80

**TYPE**: hand-held
**COVERAGE**: 150kHz-108MHz (115.15kHz - 223MHz using FRG-80 converter)
**MODES**: w.b.a.m., n.b.a.m., f.m., n.b.f.m., s.s.b.
**SENSITIVITY**: l.w. & m.w. = 42dBµV, f.m. = 9dBµV 30dB S/N
**SELECTIVITY**: ±3.8kHz @ 50dB, ±400kHz @ 58dB for f.m.
**RESOLUTION**: 3, 5, 10, 50kHz plus fine tune
**IMAGE REJECTION**: 77dB (l.w., m.w., s.w., v.h.f.), 40dB (f.m.)
**IF STAGE**: 55.845MHz, 455kHz, 10.7MHz (f.m.)
**AUDIO OUTPUT**: 400mW at 10% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 40
**FEATURES**: converter supplied, soft case, shoulder belt, frequency handbook, key protect facility, fine tune control
**REVIEWED**: *Short Wave Magazine* March 1988 (£1.65 back issue)
**PRICE:** ££299

## Signal R-535

**TYPE**: base station
**COVERAGE**: 108-142.995, 220-379.995MHz
**MODES**: a.m.
**SENSITIVITY**: v.h.f. = 0.32µV, u.h.f. = 0.46µV both for 12dB SINAD
**SELECTIVITY**: ±25kHz @ 55dB
**RESOLUTION**: 5, 10, 25, 50, 100kHz (v.h.f.); 25, 50, 100, 500kHz, 1MHz (u.h.f.)
**IMAGE REJECTION**: v.h.f. = >-55dB, u.h.f. = >-25dB
**IF STAGE**: 21.4MHz, 455kHz
**AUDIO OUTPUT**: 360mW into 8Ω
**SCAN RATE**: 12 channels per second
**SEARCH RATE**: 2.5 seconds per MHz in 25kHz steps
**MEMORIES**: 60
**FEATURES**: connection of RS232 interface possible andportable operation available
**REVIEWED**:
**PRICE:** £254

## Uniden Bearcat 100XLT

**TYPE**: hand-held
**COVERAGE**: 29-54, 118-174, 406-512MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: h.f. = 0.4µV, v.h.f. = 0.8µV, u.h.f. = 0.5µV
**SELECTIVITY**: ±25kHz @ 55dB
**RESOLUTION**: 5, 10, 12.5kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 480mW
**SCAN RATE**: 15 channels per second
**SEARCH RATE**: 25 frequencies per second
**MEMORIES**: 100
**FEATURES**: antenna, earpiece, a.c. adapter included
**REVIEWED**:
**PRICE:** £225*

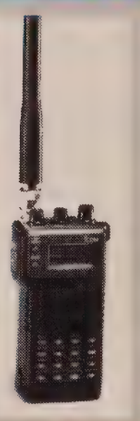
## Bearcat 210XW

**TYPE**:
**COVERAGE**: 30-50, 136-174, 406-512MHz
**MODES**: f.m.
**SENSITIVITY**: 30-50 & 136-174MHz = 0.3µV, 406-512MHz = 0.5"V
**SELECTIVITY**: ±25kHz @ 55dB
**RESOLUTION**: 5kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 1.5W r.m.s. into 8Ω @ 10% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 20
**FEATURES**: lockout facility, delay funcion,telescopic antenna supplied
**REVIEWED**:
**PRICE**: £169*

## Bearcat 800XLT

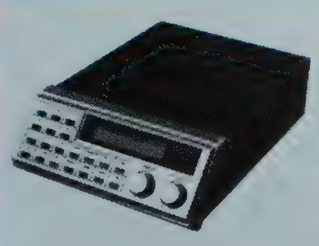
**TYPE**: mobile/base station
**COVERAGE**: 29-54, 118-174, 406-512, 806-912MHz
**MODES**: f.m.
**SENSITIVITY**: 29-54 & 136-174MHz = 0.3µV, 118-136MHz = 0.8µV, 406-512MHz = 0.5µV, 840-912MHz = 0.7µV
**SELECTIVITY**: -55dB @ ±25kHz
**RESOLUTION**: 5, 12.5, 25kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 1.5W @ 10% t.h.d.
**SCAN RATE**: 15 channels per second (rapid)
**SEARCH RATE**: 15 frequencies per second
**MEMORIES**: 40
**FEATURES**: priority channel, scan delay, direct channel access and channel lockout
**REVIEWED**: *Short Wave Magazine* March 1989 (£1.65 back issue)
**PRICE:** £257*

## Icom IC-R1



**TYPE**: hand-held
**COVERAGE**: 100kHz-1.3GHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: a.m. = 1.6µV (2-25MHz) 0.79µV (25-905MHz) for 10dB S/N; n.b.f.m. = 0.79µV (2-25MHz) 0.4µV (25-905MHz) w.b.f.m. = 6.3µV (2-25MHz) 3.16µV (25-905MHz) for 12dB SINAD
**SELECTIVITY**: a.m. more than 15kHz/-6dB, n.b.f.m. more than 15kHz/-6dB, w.b.f.m. more than 150kHz/-6dB
**RESOLUTION**: 0.5, 5, 8, 9, 10, 12.5, 15, 20, 25, 30 or 50kHz
**IMAGE REJECTION**:
**IF STAGE**: 266.7000-266.7095MHz, 10.7MHz, 455kHz
**AUDIO OUTPUT**: 150mW @ 10% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 100
**FEATURES**: multi-scan function, built-in S-meter, built-in clock with timer
**REVIEWED**: Practical Wireless July 1990 (£1.65 back issue)
**PRICE:** £359

## Revco RS-3000



**TYPE**: base station
**COVERAGE**: 26-32, 60-90, 118-180, 380-512MHz
**MODES**: a.m., n.b.f.m.
**SENSITIVITY**: v.h.f. & h.f. = 0.5µV, airband & u.h.f.= 1µVboth 10dB S/N
**SELECTIVITY**:
**RESOLUTION**: 5, 12.5, 25kHz
**IMAGE REJECTION**:
**IF STAGE**: 21.4MHz, 455kHz
**AUDIO OUTPUT**: 1.5W @ 10% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 50
**FEATURES**: compact size, l.c.d. readout, priority memory channel
**REVIEWED**: *Short Wave Magazine* June 1988 (£1.60 back issue)
**PRICE:** £199.00*

## Standard AX700

**TYPE**: base/mobile
**COVERAGE**: 50-904.995MHz
**MODES**: a.m., w.b.f.m., n.b.f.m.
**SENSITIVITY**: a.m. = 3µV @ 10dB S/N, n.b.f.m. = 1.5µV, w.b.f.m. = 1µV both for 12dB SINAD
**SELECTIVITY**:
**RESOLUTION**: 1, 5, 10, 12.5, 20, 25kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: more than 1.8W in 8Ω @ 10% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 100
**FEATURES**: telescopic antenna supplied, l.c.d. readout, backlit dsiaply, spectral display
**REVIEWED**:
**PRICE:** £545

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## Icom IC R7000HF

**TYPE**: base station
**COVERAGE**: 25-999.999, 1025-1999.999MHz
**MODES**: a.m., f.m, s.s.b.
**SENSITIVITY**: 25-999.999MHz n.b.f.m. >0.5µV, f.m. >1.0µV both for 12dB SINAD; a.m. >1.0µV for 10dB S:N, s.s.b. >0.3µV both for 10dB S:N
**SELECTIVITY**: f.m., a.m. = 7.5kHz @ -6dB, n.b.f.m. = 3kHz @ -6dB, f.m. 75kHz @ -6dB, s.s.b. = 1.4kHz @ -6dB
**RESOLUTION**: 100Hz min
**IMAGE REJECTION**: <60dB
**IF STAGE**: 778.7 or 226.7, 10.7MHz, 455kHz
**AUDIO OUTPUT**: 2.5W
**SCAN RATE**: 2 or 7 channels per second
**SEARCH RATE**: not given
**MEMORIES**: 100
**FEATURES**:
**REVIEWED**: *Short Wave Magazine* December 1989 (£1.65 back issue)
**PRICE**: £895*

## Uniden Bearcat UBC200XLT

**TYPE**: hand-held
**COVERAGE**: 66-88, 118-174, 406-512, 806-956MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 66-88 & 406-512MHz = 0.3µV, 118-136 & 806-956MHz = 0.6µV, 136-174MHz = 0.4µV
**SELECTIVITY**: -55dB @ ±25kHz
**RESOLUTION**: 5kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 500mW max
**SCAN RATE**: 15 channels per second
**SEARCH RATE**: 25 frequencies per second
**MEMORIES**: 200
**FEATURES**: memory back-up, priority scan, l.c.d. readout, lockout
**REVIEWED**:
**PRICE**: £229.00

## Bearcat 100FB

**TYPE**: hand-held
**COVERAGE**: 66-89, 138-174, 406-512MHz
**MODES**: f.m.
**SENSITIVITY**: 66 - 88 & 138 - 174MHz = 0.6µV; 406-512MHz = 1µV both @ 12dB SINAD
**SELECTIVITY**: 50dB @ ±25kHz
**RESOLUTION**: 5 & 12.5kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 300mW
**SCAN RATE**: 15 channels per second
**SEARCH RATE**: 15 channels per second
**MEMORIES**: 16
**FEATURES**: low battery warning lamp and lockout facility
**REVIEWED**: *Practical Wireless* September 1982 (reprint available @ 85p)
**PRICE**: £253 when new, now second-hand

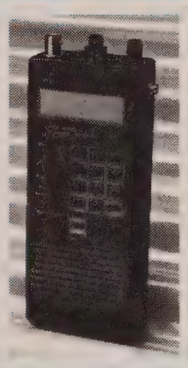
## Uniden Bearcat BC590XLT

**TYPE**: mobile
**COVERAGE**: 29-54, 118-174, 406-512MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 29-54 & 136-174MHz = 0.4µV, 118-136MHz = 0.8µV, 406-512MHz = 0.5µV
**SELECTIVITY**: -55dB @ ±25kHz
**RESOLUTION**: 5kHz min
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 2.5W @ 10% t.h.d.
**SCAN RATE**: 15 channels per second
**SEARCH RATE**:
**MEMORIES**: 100
**FEATURES**: lockout, telescopic antenna included
**REVIEWED**:
**PRICE**: £199.00*

## ASA AIR PRO II

**TYPE**: hand-held
**COVERAGE**: 520kHz-1.65MHz, 88-108, 118-136, 162.5MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: a.m. = 4.7mV/m @ 20dB SINAD, f.m. = 4µV
**SELECTIVITY**: a.m. = 10dB, f.m. = 25dB
**RESOLUTION**:
**IMAGE REJECTION**: a.m. = 25dB, f.m. = 20dB
**IF STAGE**:
**AUDIO OUTPUT**: 170mW
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**:
**FEATURES**: l.c.d. readout, external power supply port
**REVIEWED**:
**PRICE**: £60*

## Fairmate HP-100E MkII



**TYPE**: hand-held
**COVERAGE**: 8-600, 830-1300MHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: 8-550, 805-1300MHz less than 0.5µV for 12dB SINAD, 25-550MHz a.m. less than 2µV, w.b.f.m. less than 3µV
**SELECTIVITY**:
**RESOLUTION**: 5-995kHz selectable
**IMAGE REJECTION**:
**IF STAGE**: 561.225, 58.075MHz, 455kHz
**AUDIO OUTPUT**: over 100mW for 10% t.h.d.
**SCAN RATE**: 40 channels per second
**SEARCH RATE**:
**MEMORIES**: 1000
**FEATURES**: NiCads, two antennas, carry case, shoulder strap, belt clip, d.c. cable and earpiece provided
**REVIEWED**: *Short Wave Magazine* February 1990 (£1.65 back issue)
**PRICE**: £ 299.00

## Icom IC-R9000

**TYPE**: base station
**COVERAGE**: 100kHz - 1.9998GHz
**MODES**: a.m., n.b.f.m., w.b.f.m., s.s.b., f.s.k., c.w.
**SENSITIVITY**: 100-500kHz = 0.5µV s.s.b., c.w., f.s.k. 3.2µV a.m.; 500kHz-1.799MHz = 1.0µV a.m. 6.3µV; 1.8-29.999MHz = s.s.b., c.w., f.s.k. 0.16µV a.m. 1.0µV; 30-999.99MHz = s.s.b., c.w., f.s.k. 0.32µV, a.m. 1.4µV n.b.f.m. 0.5µV w.b.f.m. 1.4µV; 1-1.2399GHz = s.s.b., c.w., f.s.k. 0.63µV a.m. 4.0µV n.b.f.m. 1.0µV w.b.f.m. 4.0µV; 1.24-1.2999GHz = s.s.b., c.w., f.s.k. 0.32µV a.m. 2.0µV n.b.f.m. 0.5µV w.b.f.m. 2.0µV; 1.3-1.5999GHz = s.s.b., c.w., f.s.k. 0.63µV a.m. 4.0µV n.b.f.m. 1.0µV w.b.f.m. 4.0µV; 1.6-1.9998GHz = s.s.b., c.w., f.s.k. 1.0µV a.m. 5.6µV n.b.f.m. 1.4µV w.b.f.m. 5.6µV
**SELECTIVITY**: s.s.b., c.w. f.s.k. = more than 2.4kHz/-6dB; a.m. = more than 6kHz/-6dB; n.b.f.m. = more than 15kHz/-6dB; w.b.f.m. = more than 150kHz/-6dB
**RESOLUTION**: not known
**IMAGE REJECTION**:
**IF STAGE**: 48.79376-48.8, 776.60001-778.7, 278.60001-278.7, 10.7MHz, 455kHz
**AUDIO OUTPUT**: more than 2.5W into 8Ω @ 10% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**:
**FEATURES**:
**REVIEWED**: *Short Wave Magazine* April 1989 (£1.65)
**PRICE**: £3995.00

## Icom IC-R100

**TYPE**: mobile/base station
**COVERAGE**: 100kHz-1.856GHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: 500kHz-1.6295MHz = a.m. 3.2µV; 1.63-49.9995MHz = a.m. 1.6µV n.b.f.m. 0.56µV; 50-904.9995MHz = a.m. 0.56µV n.b.f.m. 0.2µV w.b.f.m. 0.63µV; 905-1380.4875MHz = a.m. 1.0µV n.b.f.m. 0.32µV w.b.f.m. 0.79µV; 1.3805-1.8GHz = a.m. 1.4µV n.b.f.m. 0.45µV w.b.f.m. 1.1µV
**SELECTIVITY**: a.m. = more than 6kHz/-6dB, n.b.f.m. = more than 15kHz/-6dB, w.b.f.m. = more than 180kHz/-3dB
**RESOLUTION**: 1, 5, 8, 10, 12.5, 20, 25kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: more than 2.5W at 10% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 100
**FEATURES**:
**REVIEWED**:
**PRICE**: £485

## Realistic PRO-2005

**TYPE**: base station
**COVERAGE**: 25-520, 760-1300MHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: w.b.f.m. 25-520 & 760-1100MHz = 3µV, 1100-1300MHz = 10µV; n.b.f.m. 25-520 & 760-1100MHz = 0.5µV, 1100-1300MHz = 3µV; a.m. 25-520 & 760-1100MHz
**SELECTIVITY**: n.b.f.m. & a.m. = ±9kHz -6dB, ±15kHz -50dB, w.b.f.m. = ±150kHz -6dB, ±300kHz -50dB
**RESOLUTION**: 5kHz min
**IMAGE REJECTION**: 610MHz @ 70MHz 60dB, 608MHz @ 1000MHz 60dB
**IF STAGE**:
**AUDIO OUTPUT**: 1.3W
**SCAN RATE**: 8 or 16 channels per second
**SEARCH RATE**: 8 or 16 frequencies per second
**MEMORIES**: 400 permanent, 10 temporary
**FEATURES**:
**REVIEWED**: *Short Wave Magazine* September 1989 (£1.65 back issue)
**PRICE**: £340*

## Uniden Bearcat UBC50XL

**TYPE**: hand-held
**COVERAGE**: 66-88, 136-174, 406-512MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 66-88MHz = 0.4µV, 136-174 & 406-512MHz = 0.7µV all for 12dB SINAD
**SELECTIVITY**: -55dB @ ±25kHz
**RESOLUTION**:
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 400mW into 8Ω
**SCAN RATE**: 10 channels per second
**SEARCH RATE**:
**MEMORIES**: 10
**FEATURES**: low battery indicator, memory back-up, lockout
**REVIEWED**:
**PRICE**: £100*

## Regency MX7000

**TYPE**: Base station
**COVERAGE**: 25-550, 800-1300MHz
**MODES**: a.m., n.b.f.m., w.b.f.m.
**SENSITIVITY**: n.b.f.m. = 0.4µV, w.b.f.m. = 1.0µV both @ 12dB SINAD; a.m. = 0.8µV @ 10dB s/n
**SELECTIVITY**: n.b.f.m. ± 7.5kHz, w.b.f.m. = ±5-kHz, a.m. = ±5kHz all @ 6dB
**RESOLUTION**: 5, 12.5 & 25kHz
**IMAGE REJECTION**: -50dB
**IF STAGE**: 750, 45.03, 5.5, 455kHz
**AUDIO OUTPUT**: 1W @ 10% t.h.d.
**SCAN RATE**: 5 channels per second
**SEARCH RATE**: 6 seconds per MHz
**MEMORIES**: 20
**FEATURES**: tuning dial as well as keypad, priority channel, mains adapter and mounting bracket available as extras.
**REVIEWED**:
**PRICE**: £399*

## AOR AR-3000

**TYPE**: base station
**COVERAGE**: 100kHz-2.036GHz
**MODES**: a.m., n.b.f.m., w.b.f.m., s.s.b., c.w.
**SENSITIVITY**: 100kHz-2.5MHz s.s.b., c.w. = 1.0µV a.m. = 3.2µV; 2.5MHz-1.8GHz s.s.b., c.w. = 0.25µV, a.m. = 1.0µV, n.b.f.m. = 0.35µV, w.b.f.m. = 3.0µV; 1.8-2GHz s.s.b., c.w. = 0.75µV, a.m. = 3.0µV, n.b.f.m. = 1.25µV, w.b.f.m. = 3.0µV
**SELECTIVITY**: s.s.b. & c.w. = 2.4kHz/-6dB 4.5kHz/-60dB; a.m. & n.b.f.m. = 12kHz/-6dB, 25kHz/-70dB; w.b.f.m. = 180kHz/-6dB, 550kHz/-50dB
**RESOLUTION**:
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 1.4W into 4Ω 10% t.h.d., 0.7W into 8Ω 10% t.h.d.
**SCAN RATE**: 20 channels per second
**SEARCH RATE**: 20 steps per second
**MEMORIES**: 400
**FEATURES**:
**REVIEWED**: *Short Wave Magazine* January 1990 (£1.65 back issue)
**PRICE**: £765.00

## Uniden Bearcat UBC760XLT

**TYPE**: mobile/base station
**COVERAGE**: 66-88, 108-174, 350-512, 806-956MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 66-88MHz = 0.3µV, 136-174 & 406-512MHz = 0.4µV, 108-136MHz = 0.6µV, 806-956MHz = 0.8µV
**SELECTIVITY**: -55dB @ ±25kHz
**RESOLUTION**:
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 2W @ 10% t.h.d.
**SCAN RATE**: 15 channels per second
**SEARCH RATE**:
**MEMORIES**: 100
**FEATURES**: backlit controls, options include signal booster pre-amplifier, CTCSS tone squelch decoder
**REVIEWED**:
**PRICE**: £235.00

## AOR AR900

**TYPE**: hand-held
**COVERAGE**: 108-174, 220-380, 406-470MHz, 830-950MHz
**MODES**: a.m., f.m.
**SENSITIVITY**: 0.4µV v.h.f. hi & lo, 0.8µV v.h.f. air, 0.5µV u.h.f., 1µV 800MHz
**SELECTIVITY**:
**RESOLUTION**: 5, 10, 12.5, 25kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 120mW @ 10% t.h.d.
**SCAN RATE**: 15 channels per second
**SEARCH RATE**:
**MEMORIES**: 100
**FEATURES**: supplied with NiCads, mains powered charger, two flexible antennas
**REVIEWED**:
**PRICE**: £199

## Cobra SR925

**TYPE**: base station
**COVERAGE**: 29-54MHz, 118-174MHz, 406-512MHz
**MODES**:
**SENSITIVITY**: 0.3µV @ 29-54 & 136-174MHz, 0.5µV @ 406-512MHz, 0.7µV @ 118-135.975MHz
**SELECTIVITY**: -55dB @ ±25kHz
**RESOLUTION**: 25kHz
**IMAGE REJECTION**:
**IF STAGE**:
**AUDIO OUTPUT**: 1W into 8Ω at 10% t.h.d.
**SCAN RATE**:
**SEARCH RATE**:
**MEMORIES**: 16
**FEATURES**:
**REVIEWED**: *Short Wave Magazine* April 1990 (£1.65 back issue)
**PRICE**: £150*

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- Direct keypad frequency entry
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- Priority channel
- Complete with all accessories

### Yupiteru

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- Civil/Military coverage
- Marine band FM coverage
- 100 memories
- Priority channel
- Keypad frequency entry

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- 200 memories
- Keypad frequency entry
- Rotary tuning control
- Signal strength meter
- Complete with all accessories

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**AR-2000** £279

Wide range hand held "scanner" receiver gives excellent results over a large frequency range, but like all wide range scanners it doesn't perform well below 25MHz. Manufactured by Nissei Giken for AOR.

- Coverage 500kHz to 1300MHz
- 1000 memories
- AM/ FM wide/ FM narrow
- Direct keypad frequency entry
- Rotary tuning control

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- Selectable tuning rates
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- Supplied complete with ac power supply

### Fairmate

**HP-2000** £279

See "AR-2000" as above, because the HP-2000 is also manufactured by Nissei Giken with a Fairmate label instead of AOR. Same coverage, same performance, same price. "A rose by any other name would smell as sweet".

Because as I write this the exchange rates are in turmoil, the prices quoted are subject to change without notice from the suppliers. Please call to confirm price at time of purchase.

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***National Power's Hot Air Cooling Tower.***
*Photo. David Packman, Air 2 Air Ltd.*

licencing regulations. Apparently as a student pilot you are allowed to use the radio without a licence. However, as soon as you qualify as a pilot you can't use the radio unless you get a separate v.h.f. operator's licence!

### *Weather*

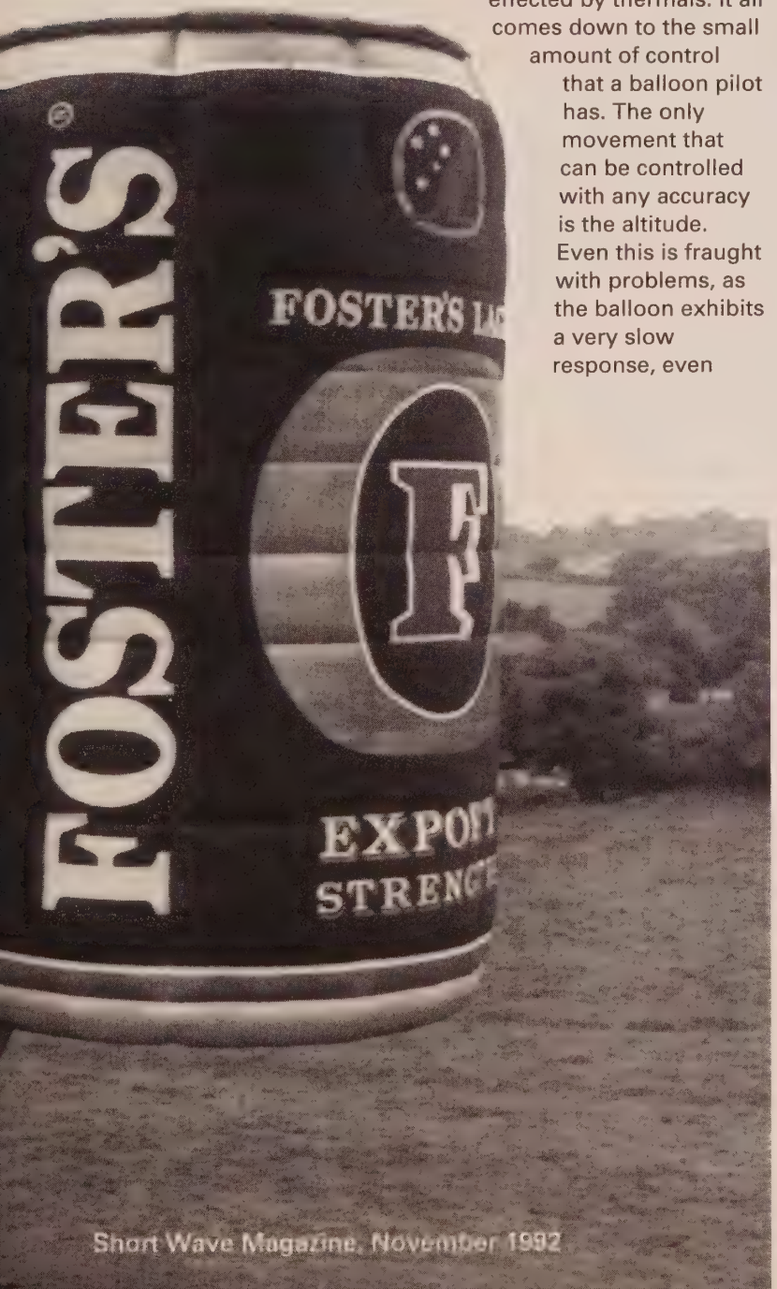
With the interest in weather that seems to be prevalent amongst radio enthusiasts, I checked out the conditions that balloonists find most difficult. Not unexpectedly this turned out to be high winds and thermals. The problems with high winds were fairly obvious, but I was intrigued to see how they were effected by thermals. It all comes down to the small amount of control that a balloon pilot has. The only movement that can be controlled with any accuracy is the altitude. Even this is fraught with problems, as the balloon exhibits a very slow response, even when fitted with powerful 2MW burners. Perhaps the most hazardous thermal condition for a balloonist is to be descending in a rising column of air. Although the altimeter may show a good steady descent your movement through the air could be significantly greater. If you should leave the rising column of air just before your landing you would plummet to earth with a significant bump! The problems with thermals are the main reason for balloonists restricting their normal flights to the mornings and evenings. With the variability of the British climate, the decision to fly or not to fly is clearly a crucial one. Regardless of the event, the final decision always rests with the pilot. In fact, the training programme for the balloon licence includes a section where the pilot has to demonstrate an understanding of human performance. This includes decision making and stress management. At the larger events the pilots responsibility is supplemented by a flight control that provides weather information and gives initial permission to fly.

With this apparent lack of control you may well be asking - how do they know where to land. The answer is they don't! It's a combination of experience and map reading to select a site where a landing will cause minimum damage to both the balloon and the landing site. This often requires quick thinking as the final go/no go decision has to be made when you're quite close to the ground.

### *Forthcoming Events*

That about concludes this short insight into ballooning. If you would like to see more, you should take a trip to one of the balloon events. There are two UK events still to come this year. The first is the British Balloon Museum and Library Inflation Day, which is to be held at Folly Dog Leg, Hungerford on November 14. (The British Balloon Museum and Library is located in Newbury.) The final event of the year is called, appropriately, the Brass Monkey Meet and will be held at Harrogate between December 31 and January 2.

I would like thank Chris Dunkley and the Unipart team for the flight and David Packman of Air-2-Air for his co-operation and guidance on the technical details. David also very kindly supplied the front cover slide of the new Radio One balloon in flight. I would also like to thank SWEB for their help with the initial contacts. If readers would like more information on ballooning contact the BBAC via their Information Officer, Barbara Green, PO Box 1006, Birmingham B5 5RT. Finally, Air-2-Air can be contacted at Vauxhall House, Coronation Road, Bristol BS3 1RN. Tel: (0272) 633333.




***Hot air balloons seem to be taking on the most extraordinary shapes these days. No prizes for guessing what this one is.***
*Photo. Mike Richards.*

# propagation

**by Ron Ham**
**Faraday, Greyfriars, Storrington, West Sussex RH20 4HE**

Another of those days - not even one beacon thus far", wrote **Fred Pallant** (Storrington) in his 28MHz log at 1920 on August 1. He again heard nothing on the 22nd and only a new beacon, IK1PCB (28.180MHz), on the 23rd.

"A fairly quiet month, I suppose results will gradually fall off in time", remarked **Ted Owen** (Maldon) on his beacon log on August 25. Quite right Ted. Although the list of 28MHz beacons heard is getting shorter, mainly due to the waning of the current sunspot cycle, the work of the observers takes on a new importance. Each time a DX beacon is heard in future it will mean, for that period of time, something has caused the band to open against the prevailing trend. From the propagation point of view, the 28-30MHz region is a scientifically interesting part of the radio frequency spectrum. It is significant because, within this and of course higher bands, solar noise can be heard and auroral manifestations can change the tone of terrestrial signals. The actual range of transmissions around 30MHz depends largely upon the condition of the ionised layers in the earth's atmosphere. This means that signal paths can be influenced by outbreaks of Sporadic-E as well as disturbances to the upper 'F1' and 'F2' regions of the ionosphere.

"We would all know where we were if the 11 year sunspot cycle was a smooth curve!", said **Gordon Foote** (Didcot). I agree Gordon, but how dull it would be. Previous 'minimums' have proved that the unexpected can happen suddenly at any time. Therefore, as cycle No. 22 draws to a close, the routine work of gathering information by the sunspot and 28MHz beacon observers will require more patience than ever.

"I've checked the bands on most days but very quiet", wrote **John Woodcock** (Basingstoke) on August 23 and added, "The 10m band has lacked European short-skip, so maybe the Sporadic-E is down this month". By the time you read this John, the 1992 Sporadic-E season will be over and our thoughts turned towards those sudden, and sometimes, unusual events that occur during the winter months.

## Solar

In Edinburgh, **Ron Livesey**, using a 2.5in refractor telescope and 4.0in projection screen, observed 3 active areas on the sun's disc on July 29, 30 & 31. "The monthly mean solar flux for July 1992 was 132 s.f.u.", wrote **Neil Clarke** (Doncaster) and, as shown on his computer print-out, **Fig. 3**, the month began at 130, climbed to 176 by the 14th, declined to 104 by the 23rd and concluded around 96 units.

Toward the end of July, **Cmdr Henry Hatfield**, (Sevenoaks), using his spectrohelioscope, located 1 sunspot group and 7 quiescent prominences at 1415 on the 27th and 4 filaments and 4qps at 1420 on the 31st. Early in August he found 4fs, 2qps and a small eruptive prominence (with a bandwidth of 5 Angstroms) on the south-east limb of the sun at 1447 on the 1st, 3gps, 1 slightly active plage near the south-east limb, 4fs, a medium fragmented loop prominence on the west-limb and 2 small qps at 1340 on the 3rd and 2gps, 4fs and a medium 'cauliflower' prominence on the north-east limb at 1140 on the 7th. Unfortunately, more detailed observation on July 30 and August 7 was hampered by cloud.

The large sunspot group seen, in **Fig. 2**, was drawn by **Patrick Moore** (Selsey) on his projection screen at 1045 on the 14th. Despite interruptions by rain, **Ford White** (Portland) located sunspots on July 31 and August 6, 10, 11, 15, 19 & 20. **Ted Waring** (Bristol) counted 18 sunspots on the 14th and 16 on the 20th. Henry Hatfield's radio telescopes recorded individual bursts of solar noise, at 136MHz, on July 31, August 3, 5 & 7 and small bursts at 1297MHz on the 5th & 7th.

| | July | | | | | August | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Beacon | 26 | 27 | 28 | 29 | 30 | 31 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 | 24 | 25 |
| DF0AAB | | X | | | X | | | X | | | | | | | | X | X | X | | X | | X | | | X | | | | | | X |
| DK0TEN | | X | | | | X | | X | | | | | | | | | | | | | | | | | | | | | | | X |
| DL0IGI | X | X | | | | X | X | | | X | | X | | X | X | X | X | | X | X | | | | X | X | | | | | | X |
| EA3JA | X | | | | X | X | | | | X | X | X | X | X | X | X | X | X | | X | | | | X | X | | X | | X | | X |
| HG5GEW | | | | | | | | | | | | | | | | | | | | | | | | | | X | X | | | | X |
| IK1PCB | | | | | | | | | | | | | | | X | X | X | X | | | | | | X | | X | | | X | | X |
| IY4M | X | X | | X | | X | | X | | X | X | X | X | X | X | X | X | | X | X | X | | | X | | X | X | | | | |
| KF4MS | | | | | | | | | | X | | | | | | | | | | | | | | | | | | | | | |
| LA5TEN | X | X | | | X | | | X | | X | X | | | | | X | | | | X | | | X | X | | | | | | | X |
| LU1FHH | | X | | | | | | | | X | | X | | X | X | X | X | X | X | X | X | X | X | | | X | | | | | X |
| LU2FFV | | | | | | | | | | | | | | | | | | | | | X | X | X | | | | | | | | |
| OK0EG | | X | | X | | | | | | X | | X | X | | X | | X | | | | | | | | | | | | | | |
| OH2TEN | X | X | | X | X | X | | X | X | X | X | | X | X | X | X | X | X | X | X | | | | X | X | X | X | X | | X | X |
| OH9TEN | | | | | | | | | | | | | | | | | | | | | | | | | X | | | | | | X |
| PT7BCN | | X | | | X | | | | | | | | | | X | | X | | | X | | | | | | | | | | | |
| PY2AMI | | X | | | | | | | | X | | X | | | X | | X | | X | X | X | X | | X | X | X | X | | | X | |
| SK2TEN | X | X | | X | X | | | X | X | X | X | | X | | | X | | | X | | | | | X | X | X | | | | X | |
| SK5TEN | X | X | | X | X | X | | X | X | X | X | | X | X | X | X | | X | | X | | | | X | X | X | | | | X | |
| Z21ANB | | | | | | | | | | X | | X | | | | X | X | | | X | X | X | X | X | | | | | | | |
| 5B4CY | | X | | | | | | | | X | | X | X | | X | X | X | X | X | X | X | | | X | X | | | | X | X | |

**Fig. 1.**

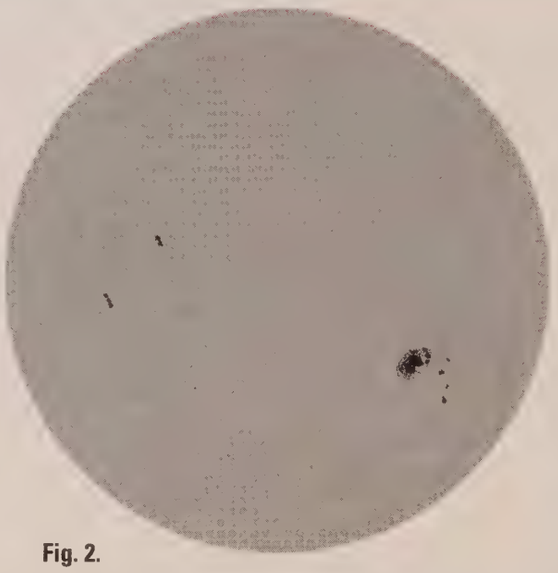


**Fig. 2.**

## Aurora

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received reports of 'very moderate aurora' for the overnight periods of July 27, 28, 29 & 31 from observers in North Dakota and Fort Simpson in Canada.

## Magnetic

The magnetometers used by **Karl Lewis** (Saltash) and **David Pettitt** (Carlisle) confirmed Ron Livesey's findings that magnetic disturbances occurred on the 28th, 30th & 31st.

## Propagation Beacons

First, my thanks to Gordon Foote, Henry Hatfield, Ted Owen, Fred Pallant, Ted Waring and Ford White for their regular 28MHz beacon reports which enabled me to compile the monthly chart, **Fig. 1**. Fred Pallant, Ted Waring and Ford White, between them, added four new beacon signals this time from Europe, IK1PCB and OH9TEN (28.266MHz) and South America, LU1FHH (28.264MHz) and LU2FFV (28.292MHz) on the days indicated in **Fig. 1**.

## Tropospheric

The daily atmospheric pressure changes for the period July 26 to August 25 can be seen in my television column elsewhere in this issue along with further results of atmospheric disturbances higher up the radio frequency spectrum.

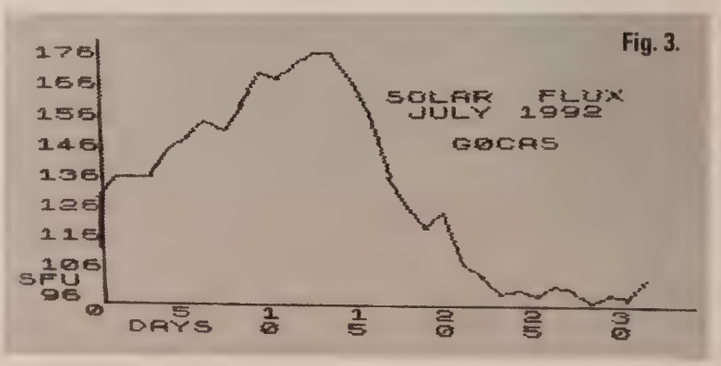



**Fig. 3.**

# bandscan

**USA**
**Gerry Dexter**

Hawaii's on the horizon! Short wave broadcast DXers who've always wanted to log Hawaii (and considered time station WWVH there more of a utility station) are going to be able to add the 50th US state to their logs in about a year. Short wave station WHRI, which operates from the State of Indiana, plans to put a station on the air from 'the Big Island'. The 100kW station will use the call letters KWHR and will beam to Asia, Australia and the Central Pacific. WHRI's programming will be fed to Hawaii via the satellite.

The number of short wave broadcasters operating in the United States continues to increase. Anytime now we should be hearing programmes over WRMI - Radio Miami International - a commercial broadcaster that will focus its programming on the Caribbean and Northern South America. The station will operate a 50kW transmitter based in the Miami area. Watch for test broadcasts using 9.955MHz. The Radio Miami International programming now on short wave is brokered over other US stations.

WEWN (Eternal World Network), based in Birmingham, Alabama, is also due to come on the air shortly. In fact, the target date is this Christmas, with test broadcasts expected before then. The Catholic group behind this station already operates a cable TV network. WEWN will use four 500kW transmitters and air broadcasts in 20 languages, beaming to all parts of the world except Asia. Here's the preliminary (and tentative) schedule:

5.825MHz fro 2200-0100UTC
7.465MHz from 0500-1000UTC
7.520MHz from 0200-0500UTC
7.540MHz from 2000-0800UTC
9.350MHz from 0400-0800UTC
9.410MHz from 0000-0400UTC
9.870MHz from 0800-1600UTC
9.995MHz from 0100-0300 & 0800-1000UTC
11.735MHz from 1300-1700UTC
11.885MHz from 2200-0200UTC
11.970MHz from 2000-2200UTC
13.615MHz from 1600-0000UTC
13.710MHz from 1400-2000UTC
17.760MHz from 2200-0000UTC
17.890MHz from 0000-0100UTC
18.930MHz from 1300-1199UTC
21.670MHz from 1300-2000UTC
21.735MHz from 1700-2200UTC

Reception reports can be sent to Mr Bob German, WEWN Transmitter Site 1500 High Road, Vandiver, Alabama 35176, USA. It seems more likely that reception of number stations will be obliterated by this new quartet of high power transmitters.

Still another US Station, KJES in Vado, New Mexico, is also on the air. KJES was active briefly a couple of years ago when it ran a few test broadcasts and then went silent. The station has recently been operating with the following schedule:

0700-0900 on 15.385MHz
0900-1000 on 9.510MHz
1400-1600 on 11.715MHz
1800-1900 on 9.510MHz
2000-2100 on 9.510MHz

No operations are schedules on weekends and, indeed, it seems this schedule may be something of a hit and miss affair. No one seems to know what the goals and purposes of the stations are, though the programming is religious in nature and is targeted at Canada and Mexico. Supposedly, there are plans to include New Zealand or the Caribbean at a later date. The station can be reached at this address: KJES, The Lord's Ranch, Star Route 300, Mesquite, New Mexico 88048, USA.

Still another formerly active station, KCBI in Dallas, Texas, which has been silent for several years, now has a schedule: 0230-1400 on 9.815MHz and 1400-0230 on 15.375MHz. However, the station continues to be dormant. It, too, is a religious broadcaster.

WJCR in Upton, Kentucky, which has been on the air only a year or so has already put a second 100kW transmitter into operation. Currently used frequencies are 7.460 and 7.490MHz. KGEI, in California, has a new address: Box 0927, San Carlos, California 94070, USA.

**AWR in Costa Rica now has the former Radio Impacto transmitters on the air.**

## *Radio Free Asia*

The United States congress has been considering the creation of a Radio Free Asia and it now seems that such a service may, indeed, be created. Radio Free Asia would be patterned after the US government's Radio Free Europe/Radio Liberty and would beam news and information to the still-communist Asian nations, especially China. The service would be aired over Voice of America transmitting facilities, although transmitter time might also be leased on former Soviet transmitters based in Siberia. Studios would be in Washington, DC.

In still other US short wave news, the Voice of America says it will build a relay station on Sao Tome. Four 500kW short wave transmitters are expected to be operational within two years, as well as a 100kW station on medium wave, which would be in service by March 1993.

## *Honduras*

Radio Copan International, which is owned in part by the same people who are setting up Radio Miami International, is reported to have tested already, although regular broadcasts have still not begun, at least as of this writing. It was airing tests between 1800 and 2200 (sometimes 1700 to 1900) on 15.675MHz. Watch this frequency as well as 9.950MHz for future activity. The station, located in Tegucigalpa, uses the call letters HRJA and broadcasts in Spanish.

## *Costa Rica*

Also running sporadic tests during the summer was the new Radio Exterioe de Espana relay in Costa Rica. This facility has three 100kW units. Early tests showed some technical problems that apparently delayed bringing the transmitters on line. It's likely they are active by now, however. Reports say that the relay will carry only REE's Spanish language programming, for a total of six to seven hours per day. The transmitters will be available for use by the Costa Rican government so you can look for the appearance of Radio Nacional de Costa Rica via the REE facility sometime in the future. Specific frequencies to be used by the REE relay have still not been announced but will be in the 6, 9 and 11MHz bands, as well as within the 60m tropical band.

Adventist World Radio's TIAWR, has now put into service the transmitters it purchased from the defunct Radio Impacto and has been heard using that unit from 0300-0500 on 5.030MHz, where Impacto used to operate. Also in use from the new Cahuita site is 9.775MHz.

## *Cuba*

With the Cuban economy and infrastructure getting progressively worse, Radio Havana Cuba is beginning to make some cuts in service. Several RHC frequencies are reported to be off the air or have had operating hours cut back.

The long association between Radio Moscow and Radio Havana Cuba seems to have come to an end. Radio Moscow relays via Havana, as well as Radio Havana via Russian sites appears to have been discontinued. In recent months the Cuban transmitters carrying Radio Moscow often suffered

**The Canadian Forces Network is replying to reports of its broadcast to Canadian troops in former Yugoslavia, aired over Radio Canada International.**

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# bandscan

from distortion and have experienced 'down time'.

Cuba, however, has found sufficient electric power to operate a jamming station targeted on WHRI and the *La Voz de Fundacion* anti-Castro programme it carries at 0000-0500 on 9.495MHz.

### Argentine Locals on Short Wave

Careful tuning may turn up some medium wave stations in Argentina being relayed on short wave for Argentine personnel in Antarctica. The relays, via military transmitters, include Buenos Aires stations Radio El Mundo on 26.099MHz; Radio del Plata on 26.139MHz (both in upper sideband) and, on weekends, Radio Mitre on 15.780MHz, lower sideband. Also on is Radio Nacional 26.299MHz u.s.b. The transmitters are apparently not very high power and many US listeners have been unable to hear these. Most of the broadcasts are on the air around 2200.

Radio Nacional's 6.060MHz transmitter, which was off the air for a while - and reportedly in very bad condition - has returned to the air. The overseas service, RAE, is very interested in getting reception reports for its 0100 Tuesday through Saturday English broadcast on 11.710MHz, as well as the beam to Europe at 1800-1900 on 15.350MHz. Address reports to: Mr John Anthony Middleton, English Department, RAE, CC 555, Correo Central, 1000 Buenos Aires, Argentina.

### Colombia

A Colombian station that was long listed in the *World Radio TV Handbook* but virtually never heard, and probably seldom, if ever active, is Radio Buenaventura, being picked up by a few DXers here. But you need a receiver with very good selectivity to be able to copy very much. Buenaventura is using 4.833MHz. The always strong Radio Tachira in Venezuela is on 4.830MHz, Costs Rica's Radio Reloj is on 4.832 and the Guatemalan station, Radio Tezulutlan operates on 4.835MHz! Most loggings here are around 0930 or 1000. One listener heard some French, along with the expected programmes in Spanish. The station recently verified a report sent to: Calle #1 #2-39, piso 2, Buenaventura, Valle de Cauca, Colombia. The gerente, Sr. Mauricio Castrano signed the QSL.

### Canada

The Canadian Forces Network is issuing QSLs for its brief programme over Radio Canada International, which is designed for Canadian troops serving in the former Yugoslavia. these are produced at CFN headquarters in Lahr, Germany, and are then telephoned to RCI in Montreal for inclusion in their programming. Reports go to Jean Choquette, Manager, technical Operations, CFN/RFC, CFPO/BPFC 5000, D-7630 Lahr, Germany. The broadcasts can be heard starting at about 1908 and running to 1914 (English) and in French from 1922-1928 on 5.995, 7.235, 13.650, 15.325, 17.875 and 21.675MHz. The first two frequencies are via BBC transmitters in the UK.

**Argentina's RAE seeks reception reports on its English language broadcasts.**

### Peruvian Loggings

Despite the many problems facing the country, Peru continues to support a long list of small short wave stations that make for always challenging DXing targets. Here are several that have been reported recently: Radio Frequencia Lider, 4.419MHz at 0100; Radio La Merced, 6.755MHz at 0100; La Voz de San Antonio, 6.629MHz at 0230; Radio Eco, 5.097MHz to sign off at 0459; Radio Marginal, 4.039MHz to closing at 0235; Radio Gran Pajaten, 4.485MHz at 0130; Radio San Ignacio at 0100 on 5.700MHz; Ondas del Sur Oriente on 5.607MHz at 0100 and Radio Concordia, 6.140MHz at 1100. All frequencies are slightly variable. That takes care of things for this time. I'll be back with you again three months from now. Until then, good listening!

# satellite tv news

**Roger Bunney, 33 Cherville Street, Romsey, Hants SO51 8FB**

Is there really 'satellite DX' asks a reader of this column ? Having been a TVDXer since 1962 and understanding the difficulties of DXing, I wonder if a test card from, say, Algeria that would be real 'exotic DX' via conventional v.h.f./u.h.f. propagation would promote the same enthusiasm if received by pointing a small dish on a line of sight path towards a known satellite and receiving the known downlink?

I find both activities exciting, perhaps the main point of satellite reception is that distant signals can be received daily on relatively small dishes and equipment now can be obtained fairly cheaply. The dish sits at ground level and receives signals daily - and continuously. The main TVDXing array will be atop a mast and at this time of the year through to about April will receive few signals - unless F2 picks up which is questionable now we're sliding down the slippery slope towards sunspot minimum mid 1996.

### *Artform*

Satellite signals can be weak and resolving, say, the east spot beam of the Cyprus TV on 7°E is an achievement if you use only a 900mm dish or less. It was put to me once by Hugh Cocks - he said that TVDXing is an art form whereas satellite reception is a science! Provided you, as the enthusiast, enjoy either or both activities as your hobby and it promotes a degree of self education - who cares!

As a post script to the above question, I achieved real satellite DX this past month! The fortnightly *Transponder* bulletin arrived and one item of news was intriguing - the Russians have a satellite at 16°W known as ZSSRD-2 that carries at least 2 onboard Ku band transponders. The function of this data relay bird is to downlink signals from the Russian MIR space station. Data information is carried at 11.375GHz Right Hand Circular polarisation (RHC) - this can often be seen as flashing lines on the screen and other than indicating you have found the satellite its unlikely to be of further use. Having thus sighted the bird, the exciting news is that a video downlink is to be found at 10.835GHz RHC in clear SECAM, this being slightly below the lower band edge of the typical Ku band satellite receiver coverage. Transmissions are irregular and when seen apparently last for between 30-45 minutes.

### *Orbital News*

There have been numerous satellite movements and re-allocations by Intelsat to improve her world-wide coverage and service with particular emphasis in the expanding Pacific Ocean region. The current parking orbits are now as follows:

| Oceanic Region | Satellite | Location |
|---|---|---|
| Atlantic | 513 | 57°W |
| | 506 | 50°W |
| | 504 | 35°W |
| | 603 | 34°W |
| | 601 | 27°W |
| | 605 | 24°W |
| | K | 21°W |
| | 502 | 21°W |
| | 515 | 18°W |
| | 512 | 1°W |
| Indian | 507 | 57°E |
| | 604 | 60°E |
| | 602 | 63°E |
| | 505 | 66°E |
| Indian/Pacific | 501 | 91°E |
| Pacific | 510 | 174°E |
| | 511 | 177°E |
| | 508 | 180°E |
| | 503 | 183°E |

There has also been designated a 'parking slot' for inclined orbital birds in the V and VA series at 40°W. Such craft are nearing the end of their operational life and are often leased out at low cost - special tracking is necessary to maintain signal throughput - SISLink have used inclined orbiting craft for their racing coverage OB links.

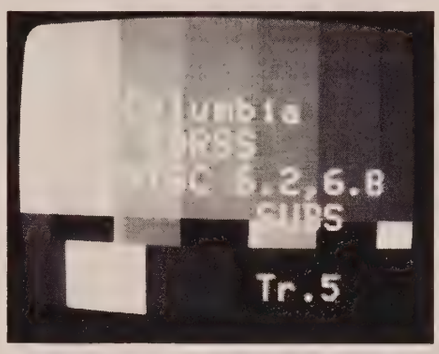
And Intelsat advise officially that their new K satellite went into operation August 20 from her 21°W slot. K carries 16 x 54MHz bandwidth transponders that can be configured into 32 TV channels. Offering 2-way signal passage between North/South America and Europe - as far east as Moscow, dish installations down to 1.2m can be successfully deployed for quality operation.

Epitel will be a 3 hour nightly news service starting in February 1993 featuring the day's event in the EC Parliament, Brussels. Epitel hope that cable operators will carry the service - which is similar to the USA. C Span operation - though in the 'States it's compulsory for cable systems to give C Span free carriage.

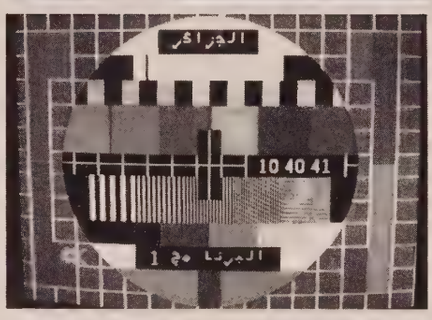
Another successful launch was Optus B-1 (nee Aussat B-1) on August 14 via a Chinese Long March 2E rocket from their Xichang site in Sichuan Province. It was, incidentally, the first time that the Great Wall Industry Company had launched a satellite for a wholly owned Western satellite operator. Last March the same bird didn't launch because the solid fuelled rocket thrust failed and stayed on the ground ! Optus will replace the earlier A series satellites and be used for TV/Broadcast transmissions.

### *Orbital Sightings*

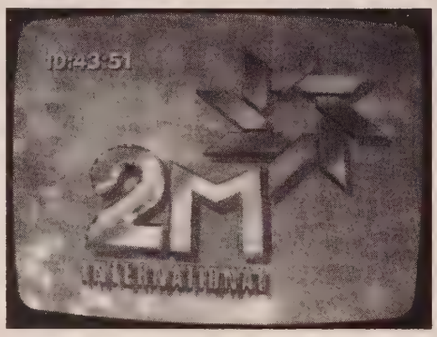
I write these immortal words on September 14 and the 1st birthday for London-based Middle East Broadcasting who transmit over Eutelsat 13°E and Arabsat across North Africa and the Middle East - to mark their birthday today's test card featured a single candle in the central circle and '1991-1992' (in Arabic text) nearby.




**The TDRSS 41°W 3.88GHz test card with audio sub-carrier identification (Ian Waller).**




**The Algerian test card in C Band-Intelsat 512 1°W (Des Sherwell).**




**The 2M International log ex-Morocco as seen over Intelsat 513 53°W (Ian Waller).**

**Kuwait TV over Arabsat 1B 33°E (Ian Waller).**

With Intelsat K now running at 21°W into programme and news circuits, for the past 2 weeks the main content seems to have been the US Open Tennis Championships, either that or Brightstar test patterns log, running at both 625 lines PAL and 525 lines NTSC. Former incumbent and heavily inclined orbiting V F2 is still apparently parked at that slot prior to moving to the 40°W graveyard in in the sky where all good series V birds will spend their last days in short term cheap lease circuits operation. Incidentally the SIS horse racing OB circuits that were a feature of the old V craft have now decamped to Eutelsat 1 F1 now operational and inclined at 25°E check out 11.490 and 11.655GHz.

There are Turkish TV downlinks everywhere with now 2 over Intelsat 601 27°W. There's another one popped up as seen by **Des Sherwell** in Berkshire, this time on Intelsat 604 60°E at 11.560GHz on test-card with 2 Turkish radio stations paired on sub-carriers 6.30/7.20 and 7.80/8.20GHz. Des also reported that the BBCWSTV + MNET C Band shared downlink from 27°W had gone into hard Irdeto scrambling but had not (as of early September) switched on dish-owner subscribers certainly in Zimbabwe (Harare) - and with the SABC (South African Broadcasting Corporation) C Band TV feed in the SE Zone beam into Africa from Intelsat 602 63°E and also went full Irdeto omitting to turn on their subscribers. Sounds like a conspiracy! Ian Waller tried to decode the 27°W Irdeto feed with an RTL-4 decoder but it couldn't unscramble the signal.

**Ian** (Lincoln Satellite Company) has been tree-lopping to clear his take-off towards the west, this brought up the 2M programme feed for Morocco ex Intelsat 513 53°W. Ian has also logged good signals from the elusive TDRSS bird at 41°W at 3.88 and 3.92GHz - and much further to the west - courting the difficult near horizon signal path A busy old month !

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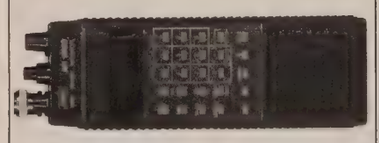

## Yupiteru VT225 — £229

The ultimate airband enthusiasts scanner

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A British built high performance receiver

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Excellent British made base receiver

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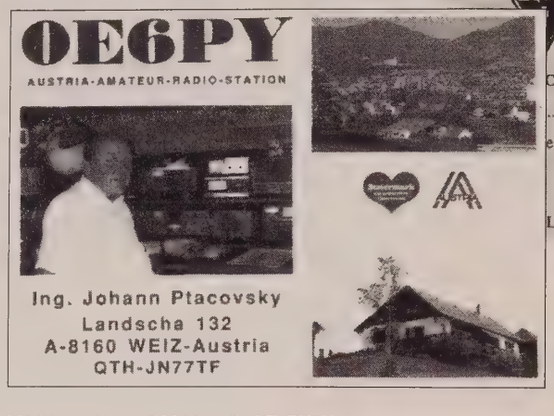
YAESU STANDARD

# amateur bands round-up

**Paul Essery GW3KFE, PO Box 4, Newtown, Powys SY16 1ZZ**




Not surprisingly, a thin month for letters since people seems to have sneaked off for a holiday! **Simon Griggs** (Chelmsford) notes the problems Gerald Bramwell has been having, and comments that he recently came across just such a problem. When a neighbour bought a cordless telephone, it was found that the local ILR station Breeze AM suddenly appeared around 4MHz when the 'phone was switched on! This sometimes arises when there is something rectifying signals external to the receiver. Thus, two big signals can hit a diode (which may be little more than a rusty nail!), and the mixed output is then re-radiated as a signal 'where it didn't oughter be'. Just post WWII, many amateurs spent long hours chasing TVI caused by this sort of effect.

Looking at the log, Simon seems to have stayed largely on 14MHz, where he notes HC7SK, D2FGC, KA1EKR, VU2JJG, VE1UK, TL8IM, SV5TS (Rhodes), VU2SMN, UZ9MYL, 7XOMR, JY9CK, 7X2KT, CP1NK, A71BV, IS0LLJ, HZ1AB, CE3GEI, VP9KM, VF7FWW on the key, KP4SQ, VK6RU, YV5ANF, LU8DZJ (c.w.), 5B4AAL, UA9KAS (c.w.), 9K2IA, UA0QJJ, TA2DG & UA9CRY (c.w.). 21MHz yielded EA8AT (c.w.), PT7VB (c.w.), PY2HY, EA8BWN, LU9CV (c.w.), UA0KAG & PY4AR both also on the key.

Around midnight on August 28, Simon heard LX1EA working VE1CDD for his sole 3.5MHz logging. A flip to forty found PY5EJ & 4U1ITU and so rounded out the month.

In Thirsk, **Mike Birch** is an addict of the 10MHz band, and only reports what he considers to be the plums, which this time include S21ZC, 9D0RR, FP/G3TKN, ZL3KR, VK2BKH & VK3XU.

**Chris Baker** in the Chelmsford area comments on the amount of time-wasting created by the use of 'last two' letters by callers in a pile-up, and then moves on to comment on his antenna arrangements. Standing-wave ratio measurements on his - indoor - antennas showed 1.5 on 3.5 & 7MHz, but between 2.5:1 and 'forget it' on the other bands, even though the a.t.u. could turn this into 1:1 for the rig to see. So, down it all came, and a single 50Ω feeder was connected to a balun centre, from which radiated trap elements for 3.5/7MHz as before plus dipoles on 14, 21 & 28MHz. After a bit of trimming, these all showed unity s.w.r. - but when Chris tried to add elements for the WARC bands he was in trouble again, though still operational on these bands by using the a.t.u. Oh, and just to crown everything, problems have since cropped up with the cordless phone!

Turning to the Isle of Sheppey, **Ted Trowell** is finding things a mite difficult at times one way and another, but he presses on regardless, 28 & 24MHz were pretty dead, but on 21MHz Ted noted ZC4SXW, UX9C, ZF2NE, PP7JR, K2LE, VY6QST, UA9SA, YC2HAX, ZA1HS, PP2AR, LU9CV, UI8GA, R4AKD, UL2M/UA9SAW, UB4MXQ, AP/WA2WYR, P30ADA & ZD8LII. Down to 14MHz and here P30ADA, RY9TI, RY5K, W5FO, WB4TDH, 9A2DS, AM25DWX/6 & VU2NBT were booked in. All these were c.w. signals, as was HB0/DL1FZ/P on Top Band, but a change so sideband here resulted in ON7BW.

The receiver part of the Lake DTR7 is used by **Eric Masters** for his listening on 7MHz from Worcester Park, and he sticks to c.w. With this simple gear, he notes various Gs, GI4PCY, DL2HCB, DL4KCA, DL7AOJ, ON6WJ/P, PA3FSC, SP3HZY, various other varieties of the DL theme, GM0PQV, F/G3OIH, F6BWF, F6OL/P, FE1NKK, HA6OY, HA8KCK, IK2PUY, ON4VL, ON7EZ, OK2BEK, SP6DAY, YL2UZ, YO5KTB & YT3KD.

We must trot down to Yeovil now, where **Don McLean** does his thing and has done for many years. Don found little on 24/28MHz, while 21MHz has been patchy, but probably at its best around 1600UTC onwards as is 16MHz which, however, has on occasion stayed open until past midnight. As for 14MHz, Don reckons the period 1600-1900 as around the best. So, on 14MHz Don hooked D2FGC, IB0Z (EU-45 for IOTA addicts), S21U, S21ZA, VQ9WM, XU2UN, 4S7VK, 9D0RR & 9M2HB; on turning to 18MHz we see AA1BU/KP2, C31HK, CO1RG, CO7JC, CR6END/P, CS6AHU, D44BS, EF92EXPO, EL2W, F6BLQ/D2, HF0POL on S. Shetland, HK0OEP, HZ1AB, J6/F2WJ, JA5AQC, JI7DUD, OH1MA/OH0, P4/YV1DPQ, PJ8AD, PZ1EL, RY0DI, TK/G3OZF/P, TU2QW, TY1IJ, UA0FF in CQ Zone 19, VE8CWI (IOTA NA 173), VE8FS/AM over VO1AA, Ws, VP8GAV in Antarctica, VP9MN, XX9AW, YN9BJ, Z21CS, ZD8MS, ZF1HJ, ZF1UK, ZK1RS, ZY0FZI, 4J4IR, 4X4FR, 5H0R0A/A, 5N0HBK, 5R8GW, 9H1/G0NOF & 9D0RR.

Dropping down again to 21MHz we find D2FGC, FY/DK2DZ, IB0Z, IG9/IK7RWE, J6/F2WT, JAs, JD1BFI (Ogasawara), TU2JL, TU2VZ, TR8GG, TY1IJ, UA9M/KC4UG, VS100SWP, VU2SMN, VU2SMN, XX9AW, ZW0RW, 3X3XV (Rotuma), 4L6HMC, 5H0R0A, 5H0R0A/A, 7Q7XX, 9D0RR & 9Y1YC. 24MHz yielded PA3ERL/5B44, VE1XDX, 4X1MO & 5H0R0AS/A & 28MHz produced V51GB & 3X0HNU.

## *Coming Up*

D2EL will be back in Luanda by the time you read this. On the debit side, that 'TF5BW' keying over the last few months was probably a phoney. The real TF5BW, Brynjolfur Jonsson, says he hasn't been using c.w. since back in 1984. Another Slim was around calling himself EP/WA2HFF, so don't waste a QSL card on this one either. A third Slim appears to have been signing TY2BA and asking for cards via the Bureau - pity, but there isn't a QSL Bureau in Benin!

By the time you read this, the FQ0CI cards should all be 'in the pipeline'. At the time of writing we await some activity from Tchad, but if you missed it, keep an ear open in early 1993, as I understand TT8OBO and TT8/WA4OBO will be active again then. His preferred frequencies are 1.8 - 10MHz, with wire and vertical antennas. On the prefix front, the ZS3 prefix covers a new call area, covering that portion of the Cape of Good Hope Province that lies to the north of the Orange River; the remainder of the province remains ZS1, and the ZS3 prefix is NOT Namibia. Plans to activate Mellish by the Heard Island DX Association have foundered for want of support, but those for Willis may well have come to fruition by the time this comes to be read.

## *Letters Again*

**Gerald Bramwell's** letter indicated that he was hoping to replace the first stage of his Trio 9R59DS with an EF183 valve, for the sake of a better noise figure and more gain. I question the wisdom of this. First, the level of atmospheric noise received, at least below 20MHz is so great that the valve's noise figure doesn't matter a lot - and that is without taking the man-made noise pollution into account. Second, one requires enough gain to lift the 'minimum discernible signal' at the input terminals to an adequate audio output. Every decibel of extra gain over that will merely serve to reduce the receiver's stability to hear weak signals in the presence of nearby strong ones. This, alas, is because the strong signal and extra gain can drive a stage beyond its linear range, producing all sorts of odd effects that in sum make your wanted signal disappear under noise. Anyway, good luck with the exercise!

Turning to the list, Gerald started on 1.8MHz, where he heard Europeans mainly on c.w. Turning to 3.5MHz we see PI4AA on RTTY, Europeans on c.w. and s.s.b. plus, in the latter mode, 9X5NH, 5N0MVE, VK6LK, JA5AQC, ZD8Z & HF0POL. On 7MHz, RTTY accounted for K1TU, SM4RGD, G3CCO, while on c.w. Gerald picked out Europeans & LU6ANN; which leaves us sideband loggings from VE1RU, UL7LS, European Russians, other Europeans, PZ1EL, LU3FA, JA7EYK, HL1IUA, CN9RTC, HF0POL, PY3OC, CX1TE, TA7J, YI1MH & LU1IV, though to be sure I admit to a smidgeon of uneasiness about the YI signal.

Up again in frequency and we come to the old work-horse, 14MHz, where all continents were decoded on RTTY - the odd bit of Morse included Ws, VEs & RB4GA, plus sideband from W2/F2YS, VE2NB, K4SBH, KF9AF, K2EWB, WB9IBF, VE1IKY, W1BIS, WA1UZZ, W8JMG, KB2SN, WA3TVP, VE3GD/1, W9NIP, KL7GU, KB8I, WR1G, WB2AQC, N3LMV, 4J4GAT, EA7CIG, EA8CO, HL2PVO, ZC4RAF, 9K2YA, ZP6XD, CT3FF, CE7ZK, F6BLQ/D2, LU2JCW, YV1CLM, ZD8LII, EA8ADQ, EA9UK, EL2PP, ZD8Z, YV4DSB, P43RR, KP4DLM, KP4AWI, HI8OMA, OA4OS, VP2MR, CX7IU, PJ2HB, 4M1G, LU5FCI, TN1AT, JO1WKO, EA9KB, CX7BF & 4X1TU. 18MHz produced loads of Ws, mainly on sideband, but he odd c.w. one too not to mention W1AW on RTTY - sideband from UA9QC/R10, 4L4IR, T77T, PJ8AD, HI8MEQ, VP9BBQ, ZS6IR, FM5GD, ZD8Z & c.w. from assorted Europeans & FY5FPK.

Starting with RTTY on 21MHz we see KO9M, SV1BJV, CU3EM, YO6JN, 4N7M, WP4IIW, J8/N2HNQ, ZD8LII, FM5WD, TI2YO, 9Y4VU & J73FTC; the keying of 9A1CRT, K1CIZ, P30ADA, EA9UK & PY4AR, While the sideband listing comes out as lots of WS, 9H1EL, VP2MR, TR8JWH, LU2EPO, PY2VA, EA9PX, PT2NJ, FM5EE, HC1RJ, LU6FFL, PJ8AD, ZD8Z, ZP7EK, EA8ADQ, CX5CG, LU9DRT, 5Z4FM, OD5SK, J6/F2WT, CE2LZR, CM8IB, 9X5HG, ZD7CRC & PZ5JR. 24MHz monitoring produced a couple of East Coast Ws, some Europeans, PJ8AD, ZP6XDW, KP2J, J37AJ & HK5LEX, while on 28MHz I see what little of note is recorded is mainly on a north-south heading.

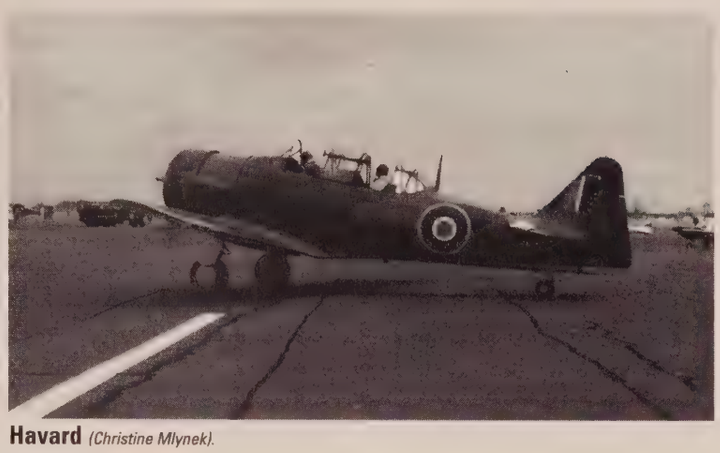
## *Deadline*

These are to arrive at Box 4; November 17, December 1 - and even earlier if possible against the Christmas postal delays - and January 8. The address is at the top of the column. don't forget, there are other amateur bands and modes to try, and to report on!

# airband

**Godfrey Manning G4GLM**
**c/o The Godfrey Manning Aircraft Museum,**
**63 The Drive, Edgware, Middlesex HA8 8PS**

Sadly, the threatened closure of Panshanger Aerodrome has now occurred (*GASIL* 8/92). This grass airfield, quite near Hatfield, Hertfordshire, once boasted a keen and active flying club. In early 1988, I attended a Safety Evening run by the CAA and hosted by the Panshanger Club. Once again, I am reminded that suitable sites for aerodromes are hard to come by as there are so many constraints. The specification for land on which houses and industrial units are to be built is far less stringent and, anyway, demand for such premises is much reduced in the current economic climate. Why sacrifice long-term amenity for short-term gain? Any property developers reading this column who would like to explain the answer are welcome to write in!



**Havard** *(Christine Mlynek).*

### *Help Me to Help You*

I find myself sympathetic to many of the remarks in the 'Editorial' and 'ssb utility listening' columns in September. Regular readers will already know that, due to a multitude of other activities, I am not able to run a direct correspondence service. If you have a question, then the answer must surely be worth printing in this column for all to see. I do publish my 'phone number, but please don't abuse it. The intention is to enable you to contact me for discussing an urgent enquiry, or piece of news for this column, where you feel that you really can't wait. I also welcome telephone calls as the easiest way to make appointments to view my museum. If you want to submit routine news, or ask a non-urgent question, then PLEASE write to me and wait for the reply which will be in the next available issue of 'Airband'.

A case in point, was a message left on my answering machine. The caller's requirements were unclear, but as neither name nor telephone number were given I was unable to reply. The address was hard to hear, and the postcode did not sound correct. If the caller recognises themself here, then please either try again (if urgent) or write in (for an answer via this column).

Also, some other points about my involvement with this column. Please note that I am not a dealer in anything (indeed I don't work professionally in aviation). So, for example, I am not able to supply charts or any other product. CAA publications are available from the CAA and I advise anyone interested to send off for the *Publications Catalogue* to CAA Printing and Publication Services, Greville House, 37 Gratton Road, Cheltenham, Gloucestershire GL50 2BN. Enclose an A4-sized reply envelope stamped for approximately 200g (64p/49p stamps for 1st/2nd Class).

How can we help each other? One problem is repetition of information. Every so often I print the addresses of useful information sources. It would be a waste of your subscription if you bought *SWM* each month only to find the same information appearing again and again. This can, I know, make it difficult for new readers. If I refer to a recent back number then PLEASE make the effort to look it up BEFORE resorting to 'phoning me. There is a back number service from the Editorial Office, but your local public library might also be able to oblige and this is, of course, cheaper. Aeronautical information is a large field. Why not keep your own 'useful information' book, updating its contents whenever you see something interesting in this (and other) columns?

Thanks to all my readers for your understanding co-operation. Together, we will continue to make 'Airband' OUR column as it enters the second half of its first decade in print!

### *Useful Sources*

The main UK agent for Jeppesen charts is no longer Oxford Airport Shop (although they might still be able to obtain charts for you). Jeppesen tell me that the new dealer is Transair Pilot Shop, West Entrance, Fairoaks Airport, Chobham, Near Woking, Surrey GU24 8HX, Tel: (0276) 858533. For European customers the regional headquarters are at Walter-Kolb-Strabe 13, W6000 Frankfurt/Main 70, Germany, Tel: (069) 96 12 48 60.

I'm sometimes asked who sells badges with airline insignia. This has become a problem since airlines became fussy about the copyright on their logos. Some badges (including tiny metal models of various aircraft) are sold by The Clivedon Collection, Witham Friary, Frome, Somerset BA11 5HH (write for a catalogue). **Colin Frowen** (Burgess Hill) registered his interest in July.

**There's a nice radial engine!** *(Christine Mlynek).*

### *Airband Happenings*

**Mr. Rowe** (Surrey) reports on the installation of high-power sub-miniature experimental d.m.e.s at Fairoaks (109.85) and Farnborough (108.05MHz). In both cases, the frequencies are those of the corresponding v.o.r. that would normally be co-channel with the d.m.e. There is no separate d.m.e. receiver control in the cockpit; instead, the paired v.o.r. is selected and the receiver automatically selects the right d.m.e. at the same time. A problem arises if you want to receive a d.m.e. not associated with the tuned-in v.o.r. Some receivers feature 'd.m.e. hold' that works as follows. The v.o.r. frequency appropriate to the d.m.e. is selected and then the 'hold' button is pressed. The receiver is now free to tune in any other v.o.r. without causing any further change to the d.m.e. selection.

Next 'reporting point' is Eastern Radar where **Nigel Haslop** (Cambridge) is wondering which relays are in operation. Chedburgh provides 133.325MHz. There is also 299.975MHz; does anyone know if Trimmingham is involved? Nigel also wants to know if the different frequencies are transmitted with the same power. You will be interested to know that the controller is actually located at LATCC, West Drayton.

Moving north now to Tamworth and some thoughts from **Geoff Powell**. 8.879MHz is an example of the same frequency being re-allocated at various parts of the world (Nat-C, Nairobi and Dar Es Salaam). Trouble is, good propagation can cause co-channel reception of the wrong network. Sydney (nominally 8.876MHz) is only 3kHz away and can add to the problem. On h.f., as with any other aeronautical radio facility, it pays to be careful.

Our route now takes us on to Manchester where we meet **L. Buckingham**. Tower is on 118.625 and Ground on 121.7MHz. In common with other airports, there are also ground service channels in the 455.55-455.65MHz range. These are for communications with the various operations vehicles that drive around the airside. Driving on the runways or certain taxy-ways could cause conflicts with aircraft and so the vehicles need to contact Tower or Ground. To facilitate this, the Tower and Ground controllers are relayed on the vehicle channels too.

### *Follow-Ups*

So where is the elusive 127.9MHz Gander outpost? **Rick Matthew VE7BFB** (Vancouver, Canada) confirms from published information that the relay is indeed at Prins Christian Sund, Greenland (see September).

Flight numbers were also mentioned in September and attracted the interest of **Jim Kilpatrick** (Co. Down). He describes the British Midland sequence. Midland 80 Bravo is the first Belfast flight out of Heathrow, returning as 81B. The B stands for the destination - Belfast in this case. 82B comes into Belfast next, and so-on. It is no surprise that other Midland destination letters are E (Edinburgh) and G (Glasgow).

*CONTINUED ON PAGE 49* ➡

**Alan Gardener**
**PO Box 1000, Eastleigh, Hants SO5 5HB.**

At the time of writing this column, the popular press is still exploiting the 'Dianagate' tape to the full. The recording, which lasts about 20 minutes, was made by Cyril Reenan, a retired bank manager, at his home in Abingdon about two years ago. He passed the tape on to at least one national newspaper where it remained locked in a safe until it recently re-appeared.

The scandal surrounding the tape, and the way in which it was recorded, caused considerable pressure to be made for changes in law relating to the use and ownership of scanning receivers. Fortunately, this has now subsided but let us hope that any subsequent revelations do not resurrect these demands.

To my mind, the most surprising aspect of the whole affair is that the person who admitted making the recording has so far not been prosecuted. It seems quite clear to me, that he had violated both the *Wireless Telegraphy Act* 1949 section 5(b) (i) & (ii) and the *Interception of Communications Act* 1985 section 1. I would also imagine that the newspapers who have printed transcripts of the recording, or have made it available as a telephone recording, could also be liable under the *Interception of Communication Act.*

I think that we can all learn something from this incident. It is not a good idea to commit an illegal act and then tell the press about it, even if he is not prosecuted (and he should be) Cyril Reenan will no doubt be regretting his involvement for some considerable time. His actions have had a severe effect on the Royal family, tainted the public's perception of scanning as a hobby and the large number of enthusiasts who use their equipment responsibly, and finally, reinforced nearly everyone's opinion of bank managers.

Please, Please, Please use your scanner wisely.

### *Micro Cellular*

Whilst we are on the subject of cellular telephones, a new system is to be launched next year initially starting just in the South East of England. The service is to known as 'Micro Cellular Network' or MCN for short, and as the name suggests, it will operate with a large number of very small cells centred in highly populated urban areas. The system will be part of the next generation of digital cellular systems called GSM which should permit use of the same equipment throughout Europe.

The service has been brought forward in order to compete with the proposed 'Personal Communication Networks' which are also scheduled to start soon using frequencies in the 1800MHz band. Many of the new MCN base stations are now operating within central London and major towns along the South coast. These are a lot smaller than their traditional counterparts and are designed around a mast which is very similar to a street lighting pole, except that it has two white collinear antennas attached to a cross bar at the top. In some cases a small microwave dish is used to link it into a another larger cell nearby. Keeping the mast this size means that it is not subject to planning permission - as some people have discovered when one is sited next to their home.

The new digital transmissions from the base stations can be heard gradually filling up the 950-960MHz band with the mobiles (when they become available) transmitting 45MHz lower in frequency. The introduction of GSM and 'Micro Cellular' should be much more effective than any legislation in seeing an end to the practice of listening to cellular telephone conversations. Let us hope that this new technology will pre-empt any changes in the law relating to scanning receivers.

### *All Change*

Browsing through various trade magazines it would seem that several changes in frequency allocations and radio systems are about to, or just have, come into effect.

Following an agreement at the 1979 Word Administrative Radio Conference the Metropolitan Police have now decided to move from their existing v.h.f. personal radio channels to u.h.f. in line with other forces. This change is likely to take place around the end of next year following a trial of trunked radio systems in central London. Trunking provides better utilisation of channels and a greater degree of security and is likely to form the basis of any new system.

Kent police are also upgrading their personal radio scheme to provide almost county-wide coverage. The new system will be provided by Philips Telecom and will be controlled from 13 area communications rooms rather than the existing central HQ.

Voice Scrambling systems are now being considered by many forces. The main contender would seem to be GEC-Marconi Secure Systems with their MASC equipment. This has now been recommended by the Association of Chief Police Officers for use on u.h.f. radio schemes in England and Wales. The MASC system provides a very secure means of communication even under poor signal conditions, which is usually a failing with simpler methods of scrambling. The method of encryption is a mixture of analogue and digital techniques which permits the 'key' to be changed easily. This means that if a radio is lost or stolen the code can be quickly altered to prevent eavesdropping.

The Customs and Excise are another user who have had to change frequencies due to reorganisation of various parts of the spectrum. They have been supplied with new f.m. equipment from Philips Telecom which will operate in a new block of eight adjacent v.h.f. channels which have been allocated for their exclusive use by the DTI Radiocommunications Agency.

Eighteen new or replacement channels in the ranges 158-159, 163-164 and 450-470MHz bands have been allocated for use as short term hire frequencies. This is because many of the existing channels in the 169.4-169.8MHz band will be used for the new pan-European Paging System known as ERMES. The short-term hire channels are frequently used when equipment is hired out for major public events such as motor races and county shows and the new allocations should help to relieve some of the congestion found on the more popular channels during the summer months.

Tyne and Wear Passenger Transport Executive is another public utility company which is upgrading their present v.h.f. communication system to a new u.h.f. trunked system, supplied by Rohde and Schwarz. The new system will provide both surface and underground communications by a combination of new radio sites and leaky feeder systems.

If you have any information on similar subjects that you feel may be of interest to other readers why don't you send them to me for inclusion in the column.

### *Hand-held Antennas*

**Richard Maycock** of Derbyshire has written an interesting letter in which he asks why he can improve reception on the u.h.f. bands by squeezing the BNC plug attaching the 'rubber duck' antenna to the top of his AOR AR2000.

I don't think that there is a problem with your receiver Richard, it is more likely that the presence of your hand is altering the resonant frequency of the antenna which is making it more

**Three popular makes of hand-held scanner that come supplied with a 'rubber duck' antenna.**

effective at the frequency you are monitoring. It is very difficult to produce a compact wideband antenna which will work effectively over the entire frequency range of the receiver. What most manufacturers provide is a small electrically loaded antenna which has several resonant frequencies. These are designed to give good results at chosen frequencies which it is assumed will be if interest to owners of the receiver.

If you take the case of the u.h.f. aircraft band for example, this covers a total range of around 200MHz which means that an antenna capable of giving consistent results across the band has to have a bandwidth of nearly 100%. Most full-size resonant antennas only manage about 20% so you can see the extent of the problem. One way around this is to tune the antenna in some way so that it remains resonant at the frequency of interest, this is effectively what you are doing when you bring your hand near the antenna.

With a hand-held receiver any antenna which is attached to the top of the set needs to have some form of 'ground plane' to operate against in order to produce a balanced antenna system. In most cases this ground plane is formed by the case or printed circuit boards within the receiver. If this ground plane is similar in size to an electrical quarter or half wave at the frequency of interest, nearby objects can have a marked effect on the performance of the antenna system as a whole. Standing the receiver on a metal surface can sometimes improve the situation, this is because the metal acts as a much larger non-resonant ground plane which becomes capacitively coupled to the case of the receiver. Almost any surface will do, even a sheet of aluminium cooking foil may do the trick. A better solution may be to try some other form of remote antenna which you could site either in a window or loft. Several designs have appeared in this column over the past few years all of which have been successfully built by readers. As with all antenna systems a little experimentation can often produce very good results at little or no cost.

## Satellite Sound

**Paul Hilton** of Berkshire has written to me in the hope that I may be able to solve a mystery for him. Whilst scanning across the u.h.f. Military Airband he came across a wideband f.m. signal on 249.5875MHz. After some investigation he found that the signal was the sound channel associated with the satellite TV station 'Screen Sport'. He believes that the signal is being re-radiated by a neighbours satellite TV receiver and wonders if anyone else has discovered this phenomenon.

Most satellite TV receivers operate in the same way. A parabolic dish concentrates radio waves at its focal point where a Low Noise Block Converter transforms the signals down to a much lower frequency band of 700-1500MHz. Individual channels can then be tuned in by means of a set top satellite receiver. In the receiver the f.m. satellite TV signal is first demodulated and then remodulated as a standard a.m. u.h.f. TV signal with a w.b.f.m. sound carrier. As you can see the signal goes through several frequency conversions before it reaches the actual TV set so it is possible that at some stage a spurious signal is being generated in the u.h.f. airband which can be received some distance away.

There are a couple of other possibilities. If the signal is always relaying the same channel it could be radiating from a nearby communal or cable TV system. These systems often convert TV signals to frequencies not normally used for TV transmissions. This is so that they can provide lots of additional channels to people subscribing to the service. It is usual for cable TV companies to receive as many stations as possible at the cable 'head end'. These signals are then transmitted via the cable on new frequencies in the range 40-900MHz. A special converter is then required at the subscribers end of the cable so that the signals can be viewed on a normal u.h.f. TV set. If the cable is not particularly well screened or has become damaged it is possible for the signals to be radiated as if they were normal TV signals. If this is the case you may be able to receive other channels offset by whatever channel spacing is in use, common ones being 7, 8, 15, 27 or 33MHz.

## Still Illegal to Use

If the content of the signal changes occasionally it may be that someone nearby is using a 'Video Sender' to re-transmit the output of the satellite receiver so that it can be viewed on a portable TV away from the house. These units have been sold in large numbers over the past few years even though it is illegal to use them. This is because they operate as a low power TV transmitter with a range of about 100m, as you can imagine this can cause a lot of interference to existing TV signals if the unit is not tuned correctly to a clear channel. What makes the matter worse is that the cheaper models produce the signal at v.h.f. The signal that the TV receives is just one harmonic of the original signal, all the other harmonics are also radiated, which may be what Paul is receiving.

My thanks to all those readers who have sent me information on various subjects - I hope to include at least some of these in the next column. Until next month - Good listening.

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## Air Experiences

I'm envious of the amount of flying **Mrs. B** (Isle of Man) puts in! Latest trip was Luton-Palma-Luton by Britannia 767 (BY151A outward, BY151B return). A short way into the outward 2hr 15min flight on G-BNCW, Mrs. B. managed to get invited to sit in the cockpit's left-hand jump seat for the rest of the trip! She had already guessed at the flight plan and was proved nearly right. The only unpredictable factor was departure flow control regulation in French airspace.

It seems that Mrs. B. has mastered the 'glass cockpit' displays such as EFIS (Electronic Flight Instrument System) and EICAS (Engine Indicating and Crew Alerting System). The 767 is an aircraft type with which she is becoming quite familiar. I must say that I still feel most at home behind conventionally-arranged 'basic-T' electro-mechanical instruments as most such layouts have so much in common. Looking around the EFIS offerings of various vendors at the Farnborough show this year, I felt decidedly confused. Layouts aren't at all standardised, information is hidden in a maze of c.r.t. 'pages' and it isn't easy to convert from one manufacturer's product to another. I also think that there is an increasing tendency to add frills, not because they make a great contribution to flight safety, but just because they are now possible and the competition hasn't thought of that feature yet! Despite this high technology, the flight ended with the following of a leader van to the stand.

The return was flown with Mrs. B. in the centre jump seat of G-BKVZ. Landing was auto-coupled. Mrs. B. didn't say if a fully automatic landing was accomplished, but I believe that Luton isn't equipped for Cat III so I suspect that the human touch was required from 100ft down. During the flight it was necessary to observe, but otherwise keep fairly quiet. This is a reflection on the intense workload caused by our congested European airspace. I must honestly say to readers that a cockpit visit really is a special treat, and not to be taken for granted. Some of you have been lucky - and written in with your experiences as a result. However, please do not undertake a flight expecting this privilege. If you are the lucky one, then of course show off your aviation knowledge (that hopefully increases with every edition of 'Airband!') but remember, the radio workload is high and the crew won't necessarily be able to stop and explain things to you.

## Frequency and Operational News

The CAA's *GASIL* of 8/92 lists the new frequency of the Prestwick n.d.b. (PW, 426kHz, not to be confused with other nearby beacons). At RAF Brawdy, the Military Aerodrome Traffic Zone and the Lower Airspace Radar Service have both been withdrawn. I am given to understand that frequency and route changes brought about by the introduction of the Central Control Function to the London Terminal Area will not take effect until at least 1995.

On the airshow scene, the Moth Rally at Woburn in August had an air/ground station on 130.5MHz and (thanks, **Graham Tanner** (Harlington)) the Falcons parachute team communicate between ground and aircraft on 255.15MHz.

The next three deadlines (for topical information) are November 6, November 27 & January 8. Replies always appear in this column and it is regretted that no direct correspondence is possible. All letters to 'Airband', c/o The Godfrey Manning Aircraft Museum, 63 The Drive, Edgware, Middlesex HA8 8PS. Genuinely urgent information/ enquiries: 081-958 5113.

## Abbreviations

| | |
|---|---|
| CAA | Civil Aviation Authority |
| Cat | Category |
| c.r.t. | cathode ray tube |
| d.m.e. | distance measuring equipment |
| ft | feet |
| g | grams |
| GASIL | General Aviation Safety Information Leaflet |
| h.f. | high frequency |
| hr | hours |
| kHz | kilohertz |
| LATCC | London Air Traffic Control Centre |
| MHz | megahertz |
| min | minutes |
| n.d.b. | non-directional beacon |
| RAF | Royal Air Force |
| s.s.b. | single sideband |
| v.o.r. | very high frequency omni-directional radio range |

# dxtv round-up

**Ron Ham, Faraday, Greyfriars, Storrington, West Sussex RH20 4HE**

What a rotten month August has been. "Weather-wise, when it wasn't raining, it was blowing a gale. DX-wise, it's the worst month since March with only the 21st giving any real distance to Band IV/V signals," wrote **David Ashley** (Norwich) on September 1. I agree David, my weather log for the month shows 22 days with notes such as 'wind' or 'rain' or both!

Early in the month, I photographed the edge of one of the weather fronts, **Fig. 1**, coming in from the west. The top area of the picture shows the blue sky, with those first 'wispy' clouds, gradually being covered by a cumulus which, in turn, made a perfect backdrop for the darker storm clouds.

"A poor month for TVDX", remarked **John Woodcock** (Basingstoke) on August 23. From Scotland, **David Glenday** reports, "its been a dreadful month for weather (and DX!)...there were bad storms including thunder and lightning, which killed a chap in the grounds of Scone Palace (near Perth) and a tree blew down in Fife causing another fatality". David's tropospheric DX was limited to the 7th, 8th & 20th and he added, "Sporadic-E has also been poor, signals fairly weak and short-lived." A similar report came on the 28th from **Lt. Col Rana Roy** (Meerut, India) who said, "I haven't had much of TVDX this year, rather I was disappointed with the poor reception".

Such remarks in your letters readers are scientifically important because it sums up the general conditions which will assist researchers in the future. Looking at this another way, Joan is learning a lot about astronomical sightings and the weather in the 1860s, by reading the diaries of a local cleric. I wonder who will be studying our reports in this magazine in 130 years time.

Remember, wherever you find such gen, it is the observations of people who were there at the time and witnessed the conditions first hand. Before I begin this months reports, I wonder how many of you have experienced the feeling of the character in **Fig. 2**. This slow-scan television picture was copied by **John Scott** (Glasgow) during August. I always have admired the slow-scan fraternity for their dedication and sense of humour.

## Band I

The best August results for **Simon Hamer** (New Radnor) came on the 10th and 11th when he received pictures, spread over both days, from Albania (RTSH), Austria (ORF), Commonwealth of Independent States (CIS formerly USSR), Czechoslovakia (CST), Denmark (DR), Germany (ARD1), Hungary (MTV), Iceland (RUV), Italy (RAI-Uno), Norway (NRK), Poland (TVP), Portugal (RTP1). Romania (TVR) Switzerland (+PTT/SSR), Sweden (SVT) and Yugoslavia (HTV). He added Finland (YLE TV1) on the 12th and the CIS on the 30th.

David Glenday logged Spain (TVE) on the 2nd, Germany, Italy and Switzerland on the 14th and Italy on the 18th & 25th.

During the critical months of the 1992 Sporadic-E season, May to July, **Owen Jones** (Blurton) positively identified stations from 15 countries with his 'old Labgear convertor and a home-brew antenna'. In addition to his best DX, Jordan (JTV Amman) and Nigeria (NTA) on July 5 and 27 respectively, his list includes the CIS, Czechoslovakia (CST), Dubai, Finland (YLE), Germany (ARD, NDR & ZDF), Holland (PTT NED 1), Hungary (Budapest), Iceland (RUV Island), Italy (RAI-Uno), Norway (Norge Televerket), Poland (TVP1), Spain (TVE) and Sweden (Kanal 1 Sverige). From these stations he saw adverts, Arabic writing, cartoons, clocks, football, ice-hockey, music, news, plays, tennis, test-cards and weather and various logos such as BETCH, BRATISLAVA, CCNP, CNOPT, HOBOCTN, OKD, PTC, TEMA and TVA. Several others slipped through Owen's net because the 'signals were coming in waves' and being lost at the time of ident. We all know that feeling Owen.

A test-card from Jordan TV (JTV Amman) was also seen by Rana Roy on July 2 and pictures from Dubai TV on the 14th, 19th, 23rd & 24th. At 1640 on the 19th, on Ch. E2 (48.25MHz), Rana saw several Arabic stations fighting for predominance on the screen and at 2040 he saw an Arabic TV news reader, **Fig. 3**, from an unidentified source which faded out completely at 2130. Many signals appeared during this extensive Sporadic-E opening on the 19th including a test-card from an unknown station scribed with 'HZ-22TV' at the top, 02 17 20 in the clock space and 'Channel 3' at the bottom, **Fig. 4**. Rana logged this one at 1648 on Ch. E3 (55.25MHz). Signals from JTV and that HZ station are both first timers for Rana.

John Woodcock received pictures from Italy (RAI) and Spain (TVE) at 1815 on August 10 and Italy again at 1619 on the 21st.

**Bob Brooks** (Great Sutton) had a reasonable haul in August with signals from Nigeria (NTA) on the 5th, the CIS on the 30th, Czechoslovakia on the 28th, Denmark (DR) on the 12th, 30th & 31st, Germany (ARD1) on the 10th, Italy (RAI) on days 7, 10, 12, 19, 25 & 28, Norway (NRK Teletext) on the 11th, 12th 19th & 30th, Spain (TVE) on the 6th, 18th, 19th & 25th and Sweden (SVT) on the 30th. He saw the clock captions from RAI and SVT, cartoons from RAI and TVE news from the CIS and RAI and the Olympics from TVE.

**Fig. 1.**

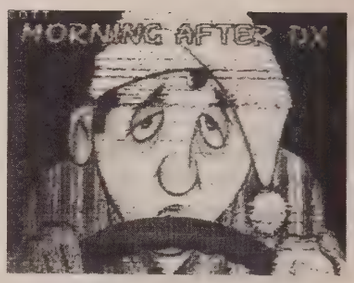



**Fig. 2: SSTV.**

## Picture Archives

The Swedish Kanal 1 test card was frequently seen in the UK during August, however, **Fig. 5** shows how it has been received in the past by **Sergei Olejnik** in the Ukraine. He also logged pictures from Syrian TV, **Fig. 6**, sometimes with co-channel interference, during the 1991 Sporadic-E season. On the satellite front, **Peter De Jong** (Leiden) received pictures of the Soyuz launch, via Spain's TVE, **Fig. 7** and Rana Roy logged Burmese and Chinese TV from Asiasat, **Figs 8 and 9**.

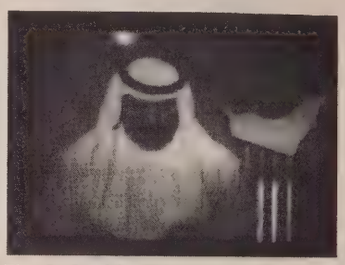


**Fig. 3: Arabic TV.**

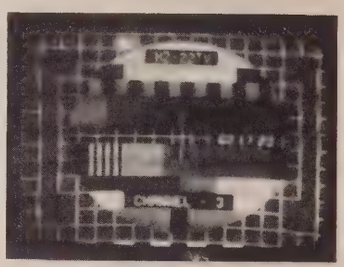


**Fig. 4: Unknown.**

## Weather

"We are having some heavy rains at the fag end of the monsoons bringing the temperatures down to 32°C during the day and 25°C overnight," wrote Rana Roy on August 28. Furthermore they are experiencing 95% humidity and hopes for more pleasant weather by the middle of September. I recorded 4.08in of rain in August compared with a mere 0.35in for August 1991. The heaviest falls came during a violent thunder storm early on the 8th and while gales pounded Southern England on the 29th. My records show that 19.31in of rain fell during The first 8 months of 1992, only 1.44in short of the total for the same period last year. The slightly rounded atmospheric pressure readings for the period July 26 to August 25, **Fig. 15**, were taken at noon and midnight from my own barograph.

**Fig. 5: Sweden.**

## Tropospheric

Rana Roy received pictures in Band III from Amritsa (Ch. E7), Bhatinda (E.12), Jalandhar (E.9), Kasauli (E.7), Lahore (E.5), Mari (Pakistan TV, E.8) and STN (Pakistan TV, E.11), **Fig.10**, between 0645 and 0915 on July 1, 3, 8, 13, 15, 19 & August 4. Several of these stations were also seen throughout the evening of the 8th.

Simon Hamer logged Germany (SWF3) on Ch. E42 on August 1 and David Glenday received weak signals from Belgium and Holland on the 7th, Denmark and Holland on the 8th and strong signals from Denmark, Germany (RTL+ & SAT1) and Holland from 0830 to 1600 on the 20th.

"For the past few weeks I have been monitoring Band III and the u.h.f.

**Fig. 6: Syria.**

**Fig. 7: Spain.**

Fig. 8: Burma.

Fig. 11: SSTV.

Fig. 12: SSTV.

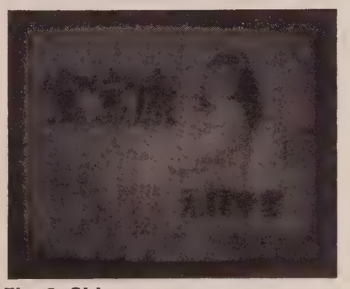


Fig. 9: China.

Fig. 13: SSTV.

Fig. 14. SSTV from G0IDO

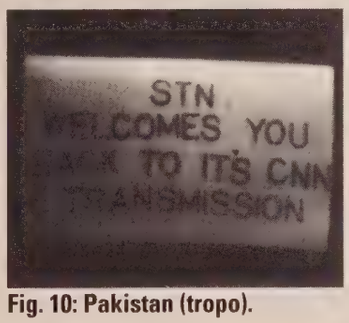



Fig. 10: Pakistan (tropo).

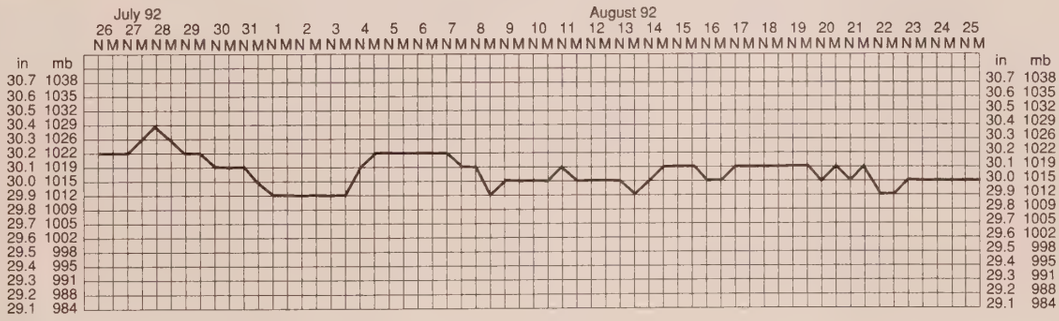
bands and have received some DX via short tropo-openings," wrote **Andrew Jackson** (Birkenhead) on September 3. He explained, "I would tune to a vacant channel, e.g. E35 and wait, eventually the Dutch 'NOS 3' test-card would be received at reasonable strength for about 20 seconds or so." By keeping watch on August 21 and from days 25 to 30 inclusive he added Belgium (BRT1 & RTBF1) and France (Canal+) to his log for Band III and France (A2) and Holland (NED3 & NOS 1 & 3) on u.h.f.

During August, David Ashley received pictures, of varying strengths, in the u.h.f. bands from Holland (NED 1, 2 & 3) all day on the 1st, 8th and 10th, Denmark (TV2) and the UK stations Central, Tyne-Tees and Yorkshire during the evening of the 8th and Central and Yorkshire in the evenings of the 9th & 10th. However, his best came after sundown on the 21st when he logged strong pictures from France (TF1, plus two others unidentified), Germany (ARD1 & ZDF) and Holland.

### *SSTV*

Although, during August, John Scott (Glasgow) was unable to receive slow-scan television signals direct from TV9CEE, an expedition at the summit of Mont Blanc, he did copy two of their captions, **Figs. 11** and **12**, re-transmitted by HB9ANT in Switzerland. John also received a 'CQ' ident from RA2FE and pictures of road-works, **Fig. 13**, from G0AZX and toy animals from G0IDO, **Fig. 14**. The art and techniques of slow-scan television is advancing all the time, especially where high-resolution colour is concerned. Unfortunately, I cannot show you the video-tape that John kindly sent to emphasis this point. His demonstration includes callsign captions from DJ0GF (Friedrichshafen) and G4UKL (Cornwall) complete with local views and station equipment, pictures of animals, birds, fruit and flowers and a special cartoon, by G4UKL, featuring a rabbit holding a watch and saying, "Hurry up we're late for the SSTV net". Among my favourites was the still-life of green and red strawberries and the strawberry plant's flower and a beautifully coloured bird on a plant.

**Fig. 15.**

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# info in orbit

**Lawrence Harris**
**5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB**

The strong winds of early August blew over my 1.6m dish that was resting on a wooden frame support. Fortunately, after a bit of metal bending, reception seems to be almost back to normal. It is worth remembering the enormous strength of the wind, particularly on larger, solid dishes. Because of local bye-laws, officially one must apply for planning permission if you wish to permanently bolt a dish to the ground.

## NOAA WXSATS

Some time ago I mentioned that NOAA 9 images appeared to be of lower quality, compared with NOAA 12, but looking at recent images I think that I was wrong. Comparing quality more closely, NOAA 9 seems to be still producing good imagery. Recent early morning pictures have shown the shadows of clouds dramatically as the sun loses its elevation. I am also sure that I saw some smoke over the Bosnia region during early September.

**Brian Dudman** of Harrow has been taking a number of photographs of NOAA images and has sent some for inclusion here - see **Fig. 2**. The weather fronts crossing Britain can be clearly seen, and behind the front, the shower clouds follow on. In my view, a study of the morning NOAA pictures can be far more informative than a detailed weather forecast seen on TV. As autumn arrives we shall see banks of fog forming around the coasts. The NOAA 13 launch has been scheduled since mid August but so far I've not picked up any transmissions. The first signals will probably be from its beacon - usually 136.77 or 137.77MHz, which contains housekeeping and low rate instrument data.

## Meteors

The end of August saw the CIS (formerly Russian) WXSATS down to just METEOR 3-3 on 137.40MHz. METEOR 3-4 was switched off on September 2 as it approached the terminator, and neither 2-19 or 2-20 have been transmitting a.p.t. I am expecting a METEOR (CIS) and FENGYUN (Chinese) launch at any time.

## METEOSAT 3

**Mike Keeley** of Bolton asked about the future availability of METEOSAT transmissions. METEOSAT 4 is expected to remain in its position near the Greenwich longitude for several years. There is an on-going programme of METEOSAT launches and I will publish further information as it becomes available. Meanwhile, METEOSAT 3 is staying within reception of the UK until the end of the year (according to my information). As reported last month, GOES 2 has left our shores, and although GOES 5 is actually within range of the UK, it is not (as far as I know) transmitting WEFAX or primary data.

## Letters

I have always assumed that readers asking questions about WXSATS will not object to those questions possibly appearing in *SWM*. Some questions are often asked by several correspondents, but the grapevine tells me that someone recently objected to his name being published. Contrastingly, I often receive thanks from readers who were pleased to see their pictures published here, or their questions answered. Ah well!

Fellow Plymothian **Jason Turner** is using Timestep's TRACKII satellite predictions program and asked about an apparent problem in entering the eccentricity as supplied in the Kepler elements that I (and other sources) provide. Other correspondents also report that when trying to enter perhaps ten figures into various predictions programs, the software ignores the last one or two figures.

NASA, and other sources of Kepler elements, point out to their users that parameters such as eccentricity can be quoted to several places of decimals, but for routine predictions use (as compared to precision computations) it really isn't necessary to use so many places of decimals. Because of this, predictions software often ignores excess numbers.

Scientists may use Kepler elements to study the upper atmosphere and its effects on low orbiting satellites, hence the accuracy of the elements published.

Some element sets may also include the satellite's revolution number relating to the orbit when the elements were measured. This number is not required for calculating the position, and so may not be requested by the program. My review of TRACKII may appear in the July '93 issue.

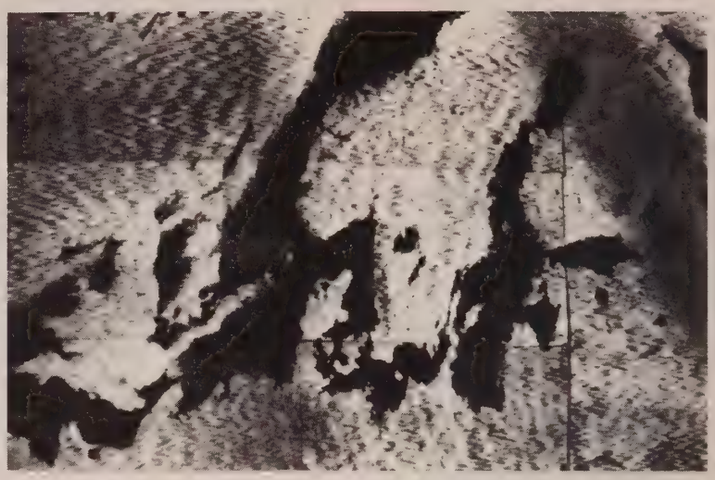


**Fig. 1: NOAA 11 composite from Roger Ray.**

**Steve Nas** of Oswestry has recently taken up weather satellite reception and while studying possible systems, he is writing software for satellite predictions. This is a very worthwhile project for those, like Steve, who are programmers, because you can design your program to produce those figures you find most helpful. For those who want to avoid programming there are a number of programs available for various computers and they will be mentioned in this column, particularly those written by readers.

**A Leigh** of Halmerend has recently acquired a predictions program prior to buying a receiver. This approach does give you an appreciation of the manner in which the various satellites orbit the earth.

## NOAA Composite

**Roger Ray** of Telford has sent me an unusual photograph. He used a framestore and the Timestep Proscan receiver and recorded NOAA 11 signals, and then replayed them and photographed the resulting picture. He repeated this with a later NOAA 11 pass and then combined both pictures to produce the final result - see **Fig. 1**. Roger also sent me a picture of his set-up but unfortunately he isn't in it! Perhaps it might be interesting to have some 'mug shots' occasionally?

**Fig. 2: NOAA 11 Spain and Europe from Brian Dudman.**

## WMO (Who?)

A reader from Cleveland has sent me a letter that he recently received from the World Meteorological Organisation, which is based in Geneva. I must admit that reading it for the first time gave me a bit of a surprise! Essentially, it explains about the allocation of frequencies for weather satellite systems and asks all those people who have reception equipment to ensure that they have registered with their national telecommunications administration.

Some years ago there was a requirement for us all to notify the Department of Trade and Industry when WXSAT equipment was being used, but that requirement was modified some time ago. I will publish further details when they become available.

## OKEAN

Correspondent **J Henry** of Nottingham asked about the picture format used by the OKEAN satellites. These are oceanographic satellites which carry imaging scanners, rather like the WXSATS, but with sensors for other parts of the spectrum. In the past we have had some superb images from COSMOS and then OKEAN satellites, often showing visible images rather like the NOAA ones, together with images taken with a radar or microwave scanner. It is more than a year since any reports of OKEAN transmissions were received.

If we do see any more images from them, they can usually be recognised by their different audio tones. Unlike the WXSATS which sometimes use 137.40MHz, the OKEAN signal doesn't include the usual grey scale and phasing bars in each scanning line. Instead there may be a composite picture containing two or even three separate images, one visible light, one radar and often one microwave. The result of this format gives a very different sound to our usual a.p.t.

## More Letters

**Donald Martin** is one of a number of readers asking about the possibility of a PDUS system review. I hope to shortly submit one for consideration. .

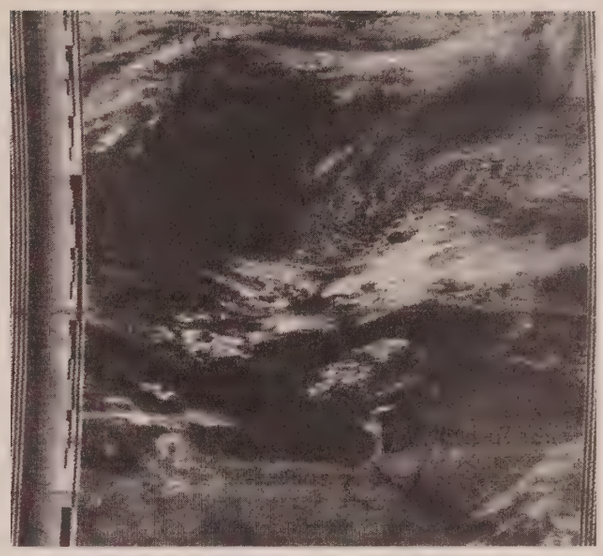


**Fig. 3: METEOR picture from Pioter Herko.**

**Mark Pepper** of Camberley has built his own computer, a 25MHz 386SX PC for which I think he should be congratulated. He is using it successfully with the ICS FAXII software, a Sony SW55 receiver and Sony AN1 antenna, together with some 'Shareware' software called JVFAX.

Mark is now wanting to receive a.p.t. signals direct from the satellites and asks about the possible use of his Sony Pro-80 receiver. Unfortunately, like most general purpose receivers, the Sony is unlikely to have a suitable i.f. design to extract the picture modulation information correctly.

The WXSATS require an i.f. of about 50kHz to accommodate the Doppler frequency shift, as well as the wider bandwidth. Any i.f. smaller than this, and information may be lost. Any more, and the sensitivity falls dramatically. Additionally, because of pager interference, the receiver circuitry requires careful filtering if good quality pictures are to be received. The signal itself is an unusual combination of both amplitude and frequency modulation, so no s.s.b. facility is required.

For anyone just entering the field of WXSAT reception, the concept of pager interference may not be familiar. Before buying any kit or receiver - ask the supplier if it has been designed to reject these signals. If you are a skilled electronics person you may be able to experiment and modify the filtering used within the i.f. strip, and probably obtain good results.

## COSMOS Satellites

Scanner users who monitor the bands looking for other satellites may be interested to listen out for several COSMOS craft that use the 150MHz band. The following ones can be heard on most days:

COSMOS 1791 150.00MHz
COSMOS 2026 149.97MHz
COSMOS 2074 149.91MHz
COSMOS 2123 150.00MHz
NADEZHDA-3 150.00MHz
COSMOS 2142 150.03MHz
COSMOS 2154 149.94MHz
COSMOS 2173 149.97MHz
COSMOS 2135 149.97MHz
COSMOS 2180 149.94MHz
COSMOS 2181 150.00MHz
COSMOS 2184 149.91MHz

Most of these satellites are part of a military navigation system and their transmissions can actually be decoded, and produce quite innocuous data! Predictions are not needed; sooner or later you can expect to pick up most of these frequencies. Occasionally one COSMOS satellite will be de-activated and another will take its place - just like the METEORS.

## Space Shuttle Manifest

Many readers, such as **Paul Maynard** of Dyfed have requested information about future Shuttle flights that I am including a list of those planned for the next few months. This data is published on a number of BBS and includes the Shuttle identifier (e.g.., STS 47), the expected launch date as of mid August, the orbital inclination (inc. of 57° result in the shuttle coming over the UK during a 24 hour period). The orbiter abbreviations are those of *Endeavour*, *Columbus* and *Discovery*. I'll publish regular updates if the interest continues.

| STS | Date | Inc deg | Alt km | Orbiter | Payload |
|---|---|---|---|---|---|
| 47 | 11 Sep 92 | 57.00 | 302 | End-02 | SL-J, GAS Bridge |
| 52 | 15 Oct 92 | 28.45 | 296 | Col-13 | LAGEOS II, USMP-1 |
| 53 | 5 Nov 92 | 57.00 | 370 | Dis-15 | DOD-1 (Department of Defense) |
| 54 | 15 Dec 92 | 28.45 | 296 | End-03 | TDRS-F, DXS |
| 55 | 18 Feb 93 | 28.45 | 296 | Col-14 | SL-D2 (Spacelab Germany) |

**Shuttle payload abbreviations:**

| | |
|---|---|
| SL-J | Spacelab Japan |
| GAS | Get Away Special |
| LAGEOS | Laser Geodynamics Satellite |
| USMP | United States Microgravity Payload |
| TDRS | Tracking and Data Relay Satellite |
| DXS | Diffuse X-Ray Spectrometer |

**Shuttle re-broadcast frequencies:**

Not all of the shuttle flights come over the UK, and in any case many followers of space activities want to monitor the flights whenever possible. Because of this, the Goddard Amateur Radio Club (WA3NAN) re-broadcast Shuttle transmissions as follows:

**Goddard Amateur Radio Club (WA3NAN):**
3.860MHz s.s.b. - night-time
7.185MHz s.s.b. - daytime
14.295MHz s.s.b. - continuously
21.390MHz s.s.b. - as available
28.650MHz s.s.b. - as available
147.450MHz f.m. - continuously

**GB2RS**
**Radio Society of Great Britain:**
3.650MHz s.s.b. - continuously
7.0475MHz s.s.b. - continuously
145.525MHz f.m. - continuously

This information is believed to be up-to-date as of mid September. Monitoring these frequencies successfully does require a suitable tuned antenna, or an a.t.u. attached to your receiver.

## UK Manufacturers

I regularly receive queries from readers who have Amigas, Commodores, Ataris and other computers and wish to know where they can obtain suitable hardware and software to decode WXSAT signals.

**John Holden** of Ilfracombe has an Atari and asked me this question. Glancing through the adverts it does seem that a number of the companies that I happen to know about have not recently advertised in *SWM*. I referred him to Spacetech in Dorset, who occasionally advertise.

In all cases, the computer will be used to produce the picture from a suitable signal, and the equipment required to produce this signal will consist of a suitable antenna, a WXSAT receiver, and a decoder. The choice of equipment may be considerable, depending on the computer used. The more popular computers have spawned a number of equipment manufacturers. In the earlier days (circa 1987) all the suppliers concentrated on the BBC computer because of the schools market. These days, the huge popularity of the IBM clones has resulted in many manufacturers (both in the UK and abroad) developing sophisticated products to cater for WXSAT users.

Some readers have written their own software which can be combined with some of the kits that are available. I will try to publish an up-to-date listing of these suppliers in a future column.

## Antennas

**Ray Howgego** of Caterham has sent me an extremely well-drawn diagram of his modified Lindenblad antenna. Ray started with a diagram published elsewhere, but has carefully modified and optimised it for WXSAT use (137.50MHz). It is so well drawn that I could not do it justice by including it here in reduced scale. Ray has provided a full description of its construction, and for those readers who would like to build their own, it does seem a worthwhile project.

**Geoffrey Chance** of Redruth has also built his own antenna, again, not the usual crossed dipole but a helix. These normally consist of a flat, square base plane, in the centre of which is a vertical rod, around which is wound a few turns of aerial wire forming a helix. This type of antenna is normally used for the higher frequency bands but can be used very successfully at 137MHz.

Geoff uses the Technical Software APT 1 module and interface, with his Sinclair Spectrum computer and a Garex spot frequency receiver, with extra filtering added. Presumably the filtering is to cut pager interference.

## Poland

A letter came from **Pioter Herko** who monitors a number of utility transmissions including the amateur radio satellites SARA, UO-11 and DOVE, and is now looking at the WXSATS. Pioter has been using an upgraded scanner with a GP antenna, and JVFAX, the Shareware program mentioned previously. To decode the a.p.t. signal Pioter has built his own demodulator which he says is very simple, consisting of three op-amps (operational amplifiers) and an A/D converter (ADC 0804). This produces 16 grey levels and he has sent me some dot matrix print-outs - see **Fig. 3**. This print is centred around the eastern Mediterranean and shows the start of the Nile.

Pioter was not able to identify the METEORS because of his dated Kepler elements but his pictures and careful logging of the dates and times show that he saw the problems with METEOR 3-4 a few months ago. Pioter has also heard several satellites around the 150MHz band and asks what they were transmitting - see 'Cosmos Satellites' in this column.

## Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz; NOAAs 10, 12 on 137.50MHz; NOAA 13 beacon 136.77 or 137.77MHz; METEOR 2-19 or 2-20 on 137.85MHz; METEOR 3-4 or 3-5 on 137.30MHz; OKEAN on 137.40MHz occasionally?; FENGYUN 1-3 try 137.80 or 137.04MHz

## Kepler Elements

I will send a print-out of the latest elements upon receiving an s.a.e. and an additional (and separate!) 1st or 2nd Class stamp. All known weather satellites are included, together with their transmission frequencies if operating. This data is supplied courtesy of NASA.

# decode

**Mike Richards G4WNC**
**200 Christchurch Road, Ringwood, Hants BH24 3AS.**

Let's start this month with a plea for help from **Francis Richards** of Helston in Cornwall. He's very interested in decoding weather RTTY stations but uses an Amiga 500 computer. Does anyone out there know of a source of suitable decoding software. Please reply to me and I will pass the details on to Francis.

**M. Cox** of Wigan recently received an interesting transmission from the Ocean Gate marine station based in New York. He would like to QSL but doesn't have the address. Fortunately, I can help out. The latest address I have is: American Telephone and Telegraph Company, Station WOO, End Of Beach Avenue, POB 550, Manahawkin, NJ 08050, USA.

**Harry Scrase** of Sandwich has been following-up my Swed-ARQ list that I printed in the August 'Decode'. However, he asks why, when the main message is in Swedish, do most of the messages end with the words 'End of Message'. The significant point is that this is sent in English. I don't know the answer for certain, but would guess that it's connected with the use of English as an international language. The use of an international language is essential when operating manually controlled international links. The key is in the manual control, which means radio operators will be monitoring the link. Whilst they don't need to understand the message, they do need to know when the message has finished. It's this requirement that's met by the use of English to note the end of the transmission. This is just an educated guess, but if anyone out there knows better, I'd be pleased to hear from you.

**William Eyre** of Stockport has logged a station that readers may like to monitor. The station in question uses the callsign URD and is located in St. Petersberg (ex-Leningrad) using 8.6761MHz. Whilst idling the station sends URD in c.w. followed by KYKYKY....KYKY in ARQ 625 at 100 baud with a 170Hz shift. The station appears to operate continuously with the test tape interrupted with fairly short messages, mostly in English.

Amateur data communications on the 50-54MHz band are the subject of a question from **W. Floyd** of Llanon. He has heard the signals and would like to know what modes are used. There are three prime signal type that can be found on this band but by far the most common is Packet. This mode is included in many decoding systems and operates with a 200Hz shift running at 1200 baud. The signals are send as relatively short bursts with a handshake or answer from the distant station. The other mode you may find is AMTOR. From a decoding point of view this is the same as SITOR, so can easily be decoded by many systems. Finally, you may occasionally find the odd RTTY signal. The standard format for this is 45.5 baud with a 170Hz shift though you may find faster speeds in use from time to time.

## Pen Pals

Continuing the pen pal feature I introduced recently, **Peter Blackley** of Wirral has asked to be included. Peter has developed an interest in the hobby over a period of time and is looking to set up a comprehensive station in preparation for his retirement. His present station comprises a Trio R-1000 receiver that is fed by G5RV and random wire antennas. He also has an Icom R-7000 receiver and a MVT7000 hand held unit. On the decoding front he has a newly acquired Easy Reader from Dewsbury Electronics.

His main area of interest is the marine bands and he spends much of his time by the river observing and photographing shipping on the Mersey. If you would like to write to Peter, please send your letters to me and I will pass them on to Peter. He can then choose to communicate directly.

## Hurricane Andrew

Ok, so where are all the FAX pics of this event? I managed to miss it completely as I was away from home, but felt sure that I would be inundated with pictures from readers. To date I've had just one letter from **Jim Richardson** of Straithness. You should see at least one of his images in the column. They were received from US Navy Norfolk using a FAX package from Technical Software. If you've received any good pictures, I'd very much like to see a copy.

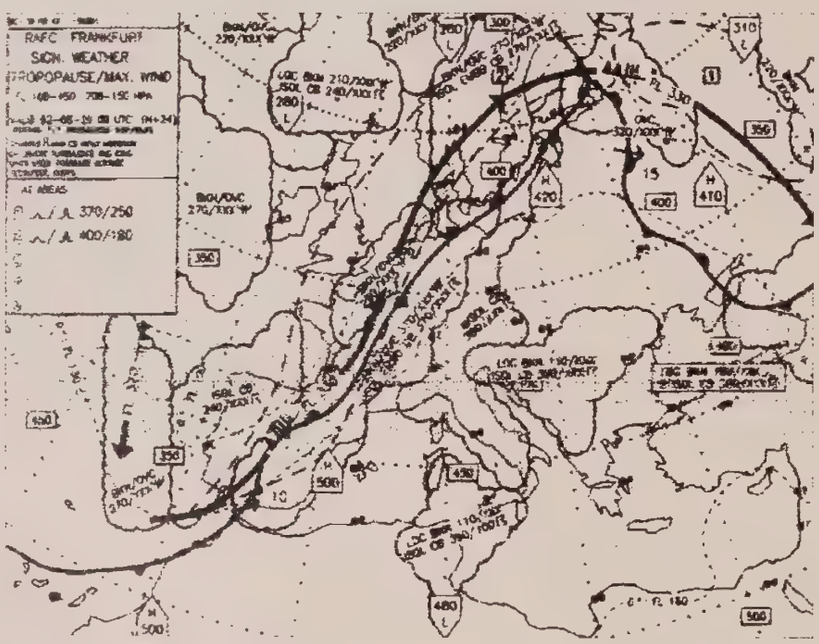



**Fig. 1: A FAX chart received by Colin Goodall.**

## Shifts

**David Byrne** from Ilford is a professional programmer and has recently developed an interest in utility decoding. What he now needs is a source of reference material that will enable him to develop his own decoding programs. One of the areas that, as a newcomer, he finds confusing is the varying shifts that are used. Well, hopefully I can throw a little light on this.

Although a wide variety of shifts can be found on the h.f. bands, the decodable signals are generally confined to just a few shifts. Probably the most popular utility stations are press and Meteo. These almost exclusively use a shift of 400Hz so making life easy. The next most popular are the various marine SITOR signals. These are even easier to handle as they used standard speeds and shifts. The baud rate is fixed at 100 baud while the normal shift is 170Hz. If we restrict ourselves to RTTY the other shift that you may well find in common use is 850Hz. If you have a decoder that shows the shift on the tuning display you can use this to indicate the type of signal you are receiving. This can greatly speed-up the decoding process when a new signal is encountered. For more technical information of the format of various signals I would recommend getting hold of a copy of the Klingenfuss *Radio Teletype Code Manual*.

## Northwood FAX

Northwood FAX station transmits a range of charts that are intended to support the Royal Navy fleet at sea. The stations popularity is due to the very clear easy to read charts that they send. As the schedules change from time-to-time I think it's about time I gave them another airing in the column. The format used for the transmissions is standard FAX with an IOC of 576 and a drum speed of 120 r.p.m. All frequencies operate on a 24 hour basis to the following schedule:

0300 - Schedule
0320 - 00Z Surface Analysis
0400 - 18Z Significant SU Wind and Weather prognosis
0540 - 00Z Selected Upper Air Ascents
0600 - Repeat of 0320
0620 - NAC TAFS
0730 - Repeat 0400
0750 - Combined 0 and 2 degree Celsius 12Z prognosis
0825 - Gale Summary
0950 - 06Z Surface Analysis
1130 - Gale Summary
1150 - 06Z Significant SU Wind and Weather prognosis
1210 - Repeat of 0950
1230 - 06Z Sea and Swell Prognosis
1300 - Sea Surface Temperature Analysis
1425 - NAC TAFS
1500 - 12Z Surface Analysis
1640 - Schedule
1650 - 12Z Selected Upper Air Assents
1930 - Gale Summary
1950 - Repeat of 1500
2025 - Repeat of 1150
2050 - Repeat of 1230

Frequencies: 2.374, 3.652, 4.307, 6.446, 8.3315, 12.8445 & 16.912MHz. Of these, 6.446 and 8.3315MHz seem to give the best signals in the UK.

One point to watch out for with these transmissions is multi-path propagation. This shows as a general smudging of all vertical lines. The only practical solution is to try another frequency. My thanks to **Ken Michaelson** for supplying this schedule.

## Ship Names

**Robert Hall** of Cape Town is a well respected utility listener with many years of experience. Like many listeners, he enjoys monitoring marine communications and tracking the movements of ships around the oceans. It's this interest that's prompted Robert to write with a question - is there a reference book that correlates callsigns against ships names? If this is to be truly international it would obviously be a large (and expensive) book. I've started a few

enquiries but thought I'd mention the problem in the column to see if anyone has found such a publication. If so, please drop me a line with the details, including the supplier.

### *Intelligent Terminal Units*

**Werner de Bock** from Peterborough is a balloon pilot so has a natural interest in the weather. A natural development of this interest is to receive weather information direct. Werner started this process by typing-in a copy of Mark Philip's weather decoding program. His question is a simple one - what's a PK-232? This is a good question as I'm sure many newcomers have difficulty in understanding the various decoding options. The PK232 is a commercial decoding system that's manufactured by the US company AEA.

In the early days the main market was with radio amateurs who needed a unit that could send and receive some basic data modes. Initially, these modes were just c.w. RTTY and AMTOR. However, since then the units capabilities have increased and FAX and a few other modes are included. In use, the PK-232 is wired between the audio output of the receiver and a computer. At the computer end of the lead the PK-232 needs a serial port. These go by various names, but the most common is called RS-232. The tones of the incoming data signal are process by the unit and converted into an ASCII code. This code is chosen as it's the one used by the vast majority of computers.

Incidentally, the letters are an acronym for American Standard Code for Information Interchange. In order to display the decoded signal the computer needs to run what is known as a terminal program. This is a simple program that takes the ASCII data arriving on the serial port and displays the appropriate character on the computer screen. In order to control the operating mode of the PK-232 you also need to be able to send commands from the computer keyboard. This is also handled by the terminal program. All that happens is that the computer converts each key press into the appropriate ASCII code and send this out via the serial port. This is the very simplest implementation of a terminal program, but you will find that most computers have more sophisticated programs available. These programs are either bundled with the PK-232 or are available at a modest extra cost. I would strongly recommend seeking out these programs as they make operation very much easier.

One of the great advantages of decoders like the PK-232 is that the key operational parameters are software controlled. This means that new modes can be added simply by changing a plug-in ROM (Read Only Memory) device. This single factor is one of the main reasons for the continuing success of this unit. If you would like to know more a scan through the ads to find your local dealer is a good first move.

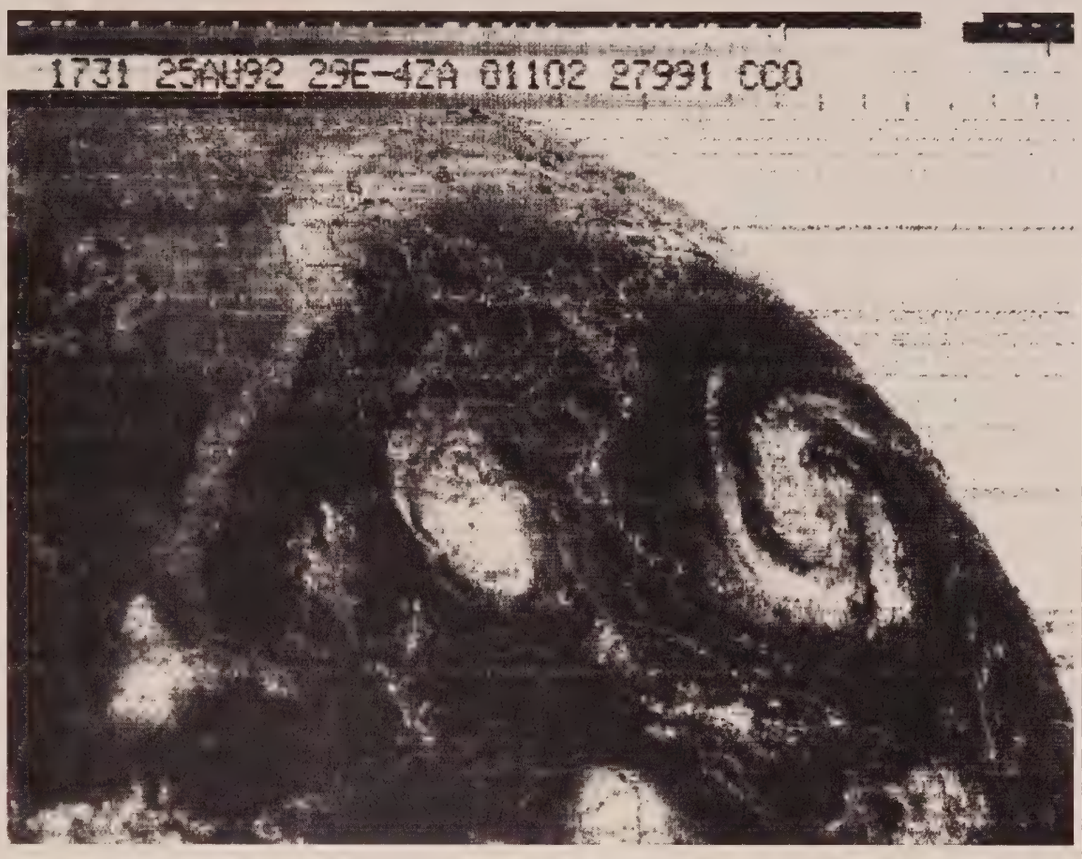



**Fig. 2: Gulf of Mexico, Hurricane Andrew, from Jim Richardson.**

### *Return of TASS?*

I think most listeners have probably given up all hope of the old TASS h.f. network being reactivated. A report just sent by **Keith Mayhew** offers a glimmer of hope. Whilst tuning around the 16MHz band with his Microreader, Keith came across a RTTY test tape on 16.032MHz. The signal format was standard RTTY, with a shift of 400Hz and running at 50 baud. The transmission ran as follows: RYR RYR RYR RYR ITAR TASS MOSKVY VYZYVAET KABUL ITAR-TASS RYR

The word VYZYVAET looks like an error, but it was transmitted repeatedly in that form. Of course, Kabul is the capital of Afghanistan, which suggests that the station is actually located outside the old USSR. Having checked through my references, this particular transmission remains a mystery. If anyone has more data, please drop me a line. Just in case there is a chance of TASS returning, I thought it appropriate to list a selection of their old frequencies. It may be worth having the occasional scan through these to check for activity.

**English**

12.085, 12.315, 14.49, 14.51, 14.7, 15.575, 16.14, 18.125,18.385, 18.405, 19.845 and 20.615MHz.

**French**

10.105, 16.19, 16.26, 17.51, 18.05, 18.16, 18.195, 18.27, 18.31, 18.35, 19.105 and 20.965MHz.

The main transmission times were on the hour, every hour between 0600 and 1800UTC. As I mentioned earlier, I'd be very interested to hear of any activity on these frequencies.

### *Halifax Meteo*

Another reliable FAX and RTTY station is the Canadian Forces Met station that's located in Halifax, the capital city of Nova Scotia. The unusual feature about this station is that it sends both FAX and RTTY broadcasts on the same frequency. The callsign used for all frequencies is CFH and the current frequencies are: 0.1225, 4.271, 6.4964, 10.536 & 13.51MHz. The best UK reception is generally to be found on 10.526 and 13.51MHz. The format used for the transmissions is 75 baud and 400Hz shift for RTTY and IOC 576 with a 120 r.p.m. drum speed for FAX. As you would expect the weather reports all relate to the area around Halifax but there is lots of interest with detailed ice charts and the like.

### *Frequency List*

My list for this month has, as usual, been complied from logs sent in by readers. If you would like a copy of my complete list, just send three first or second class stamps to the address at the head of the column. It's important to remember that the list is totally dependant on readers contributions, so please keep those logs coming in. Don't be misled into thinking that the logs have to contain lots of DX. I need the run of the mill stations just as much as the list is regularly updated to remove any stations that have not been logged recently. Back to this month's list,I've used the normal format of: frequency, mode, speed, shift, callsign, time and notes. Contributors for this month are **Day Watson**, Robert Hall and **Chris Norfolk**.

3.196MHz, RTTY, 50, 400, OLB6, 2208, Prague Met.

6.3165MHz, SITOR A, 100, 170, PCH35, 1810, Scheveningen Radio

6.821MHz, FAX, 120, 576, -, 0655, USAF (Croughton?)

8.123MHZ, ARQ-342, 96, 400, TNL, 2235, Brazzaville Air

8.165MHz, RTTY, 50, 170, 5YD, 2355, Nairobi Air

9.1536MHz, RTTY, 50, 1260, D4B. 2244, SAL Air

10.15MHz, 75, 322, SUA246, 1998, MENA Cairo

10.98MHz, FAX, 120, 576, RDD79, 2315, Moscow Met Sat Pix

11.039MHz, RTTY, 50, 400, DDH9, 1400, Hamburg Met

11.064MHz, RTTY, 75, 500, -, 2215, MFA Sofia

11.1124MHz, RTTY, 50, 850, ETD3, 2314, Addis Ababa Air

12.6075MHz, SITOR B, 100, 170, WNU, 2220, Slidell Radio

13.274MHz, Twinplex, 100, -, -, 0700, MFA Copenhagen

15.705MHz, RTTY, 50, 400, YZJ6, 1219, TANJUG Belgrade

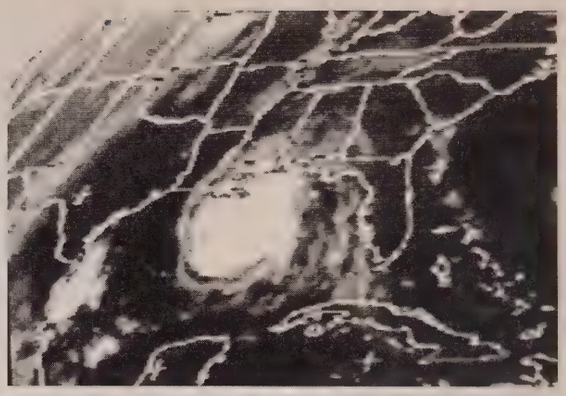
19.5195MHz, RTTY, 50, 850, JMG5, 1540, Tokyo Met

20.734MHz, SITOR A, 100, 170, -, 0922, UN Geneva

Also, the Beginners' Frequency list is available as per last month.

# ssb utility listening

**Peter Rouse GU1DKD, Barcroft, Rohais de Bas, St Andrews, Guernsey, C.I.**



**Hurricane Andrew in the Gulf of Mexico just as it hit Louisiana. Recorded from Meteosat Channel 2 (rebroadcast from Meteosat 4) at 1230UTC on August 25.**

I feel as if I was blessed (or cursed) with a crystal ball for the September issue with my advice to keep a check on hurricane activity in the Caribbean. Hurricane Andrew hit Florida and other states with a devastating force and Homestead Air Force Base just south of Miami was almost completely destroyed.

Surprisingly, the frequencies I gave for the NOAA Hurricane hunter operations did not seem very active, although a fair bit of hurricane related traffic was heard on some of the USAF frequencies. I recorded several pictures from Meteosat channel 2, which clearly showed the hurricane tracking across southern Florida and on into the Gulf of Mexico, 11.1760MHz in particular was very active. **Tony Duggan** monitored this frequency between 0051 and 0142UTC on August 26 and heard relief and rescue operations taking place. Callsigns heard included Tiger Eye, Hay Fever, Rescue 26, Rescue 621 and King 21. Andrews Air Force Base appeared to be coordinating the operations.

**Graham Tanner** (that name rings a bell!) also listened-in on 11.1760 and heard hurricane related traffic with callsigns Rescue 261, King 70 and King 24. King 70 reported that the small Tamiami airport just South of Miami was destroyed. Graham also logged REACH 67949, a C141b inbound to Singapore working Clark Airways on 11.1760MHz. Interesting..., because the latest intelligence (see later) suggests that Clark has been dropped from what is now the GHFS network. When it was a GCCS station it used the call sign Clark. What is going on here? Graham also heard a United Nations station in western Sahara calling on the same frequency asking for 'morale' phone patches, but was told to use the MARS stations on 13.9270 or 14.606MHz.

**Keith Elgin** has provided an updated list of the former USAF Global Command Control System (GCCS), which is now known as the Global High Frequency System (GHFS). This list is not from an official source but it should be accurate. Once I can get hold of the latest *USAF Flight Information Handbook* I will confirm them.

***Albrook Air Base***
**6.738**, 11.176 & 15.015MHz
***Andersen Air Force Base***
6.738, 8.967, 11.176 & 13.201MHz
***Andrews Air Force Base***
**6.738, 8.967, 11.176 & 17.975MHz**
***Ascension Is. Aux Air Force***
6.738, 11.176 & 15.015MHz
***Croughton Air Base***
**4.725, 6.738**, 11.176, **13.201, 15.015 & 17.975MHz**
***Elmendorf Air Force Base***
4.725, 6.738, **8.967**, 11.176, 13.201, **15.015 & 17.975MHz**
***Hickam Air Force Base***
6.738, **8.967**, 11.176 & 13.201MHz
***Incirlik Air Base***
**4.725**, 6.738, **8.993**, 11.176, 15.015 & **17.975MHz**
***Lajes Field***
**6.738**, 8.967 & **15.015MHz**
***Loring Air Force Base***
**6.738, 11.176 & 15.015MHz**
MacDill Air Force Base
**6.738**, 8.993, **11.176 & 15.015**
***McClellan Air Force Base***
**4.725**, 6.738, **8.967, 11.176**, 13.201, **15.015 & 17.975MHz**
***Offutt Air Force Base***
**6.738, 8.967, 11.176 & 17.975MHz**
***Thule Air Base***
6.738, 8.967, **11.176**, 13.201 & **17.975MHz**
***Yokota Air Base***
**4.725**, 6.738, 8.967, **8.993, 11.176**, 13.201 & **15.01MHz**

The frequencies **in bold** are new ones for the bases and it appears that Andrews, Loring and Offutt (Nebraska) have been added to the network. Clark Base in the Philippines has now been dropped. If you have the companion book then make the changes listed and drop any frequencies that are not shown in the above list. Note that the Autovon telephone patching system has now been renamed the Defense (sic) Switching Network (DSN).

Keith also heard several unidentified stations on 11.3300MHz referring to clinics and nurses at Bluff, Gregory and Alice Town. The Rouse atlas of small and obscure places has located them all in north west Australia. Callsigns heard were CH, RC, SC, Tanker and 5XO but who are they? The frequency is a civil aviation one, so was it the flying doctors service?

## More Logs (guaranteed free of Dutch Elm beetles)

More entries from **Tony Duggan's** log show US Coastguard activity on 5.690, 6.7380, 8.7640 and 8.9840MHz. Tony also logged an AWACS using the call sign Magic 53 on 6.7480MHz. Tony is also one of quite a number of readers who have logged a lot of activity from the USAF base at Incirlik (near Adana) in Turkey. Some theories suggest this may be because of the relief flights into Yugoslavia, but I am not sure because the distance is actually less from German bases such as Ramstein where the USAF also have better logistics. I think, perhaps, the renewed activity in the Gulf to create the so called 'No Fly' zone over southern Iraq may be a more likely explanation.

Still with Yugoslavia **Mr S. Viney** logged a heavily accented voice on 11.2705MHz on August 26. Sarajevo was mentioned and the weather was given for LICZ. That is the ICAO indicator for Sigonella, an Italian base regularly used by both the RAF and USAF and this would be a logical staging post for operations (the frequency is a new one for my list).

Keith Elgin logged several USAF special air mission (SAM) flights with acting Secretary of State Lawrence Eagleburger shuttling back and forth to the Yugoslavian peace conference in Geneva. The callsign SAM 973 was used and traffic was heard on 18.3232, 18.317 and 6.683MHz.

The GHFS frequency of 11.176MHz was in use for USAF relief flights going into Mombasa in Kenya and were logged by **Ron Galliers** on August 14. Ron says the flights were prefixed with REACH but he does not understand the pattern of numbers or letters and number that follow. Does anybody know the significance of these?

## World-wide Readership

This column seems to becoming more international by the month. I have had a letter from **Dominique Kremp** in Coutances in France asking about some strange signals on 2.2630, 2.2685, 2.4480, 2.6580 and 2.9950MHz. These consists of scrambled speech with each over ending in what sounds like a burst of RTTY. These are not ones I am familiar with, so has anyone got any guesses? Dominique mentions occasionally visiting somewhere called Jersey, but I cannot say I have ever heard of it (Outer Hebrides perhaps)!

I was very surprised, but pleased, to get a letter from **Ivan Cholakov** in Bulgaria. Ivan is a 21-year-old student studying international economic relations and he has been interested in short wave broadcast stations for about six years. However, he occasionally gets to see a copy of *SWM* and has now latched onto utility stations and would like to get in touch with other readers. Ivan writes (and presumably speaks) excellent English and if you want to get in touch with him his address is: Ivan Vazov St 38, 1000 Sofia, Bulgaria.

Cracking logs this month and so many that I have had to hold some over. **Chris Haig** and **Simon Watt-Shudden** your turn will come.

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# long medium & short

**Brian Oddy G3FEX, Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS**

The change-over from British Summer Time (BST) to Greenwich Mean Time (GMT) on October 25 will herald the arrival of long dark evenings. They may not suit everyone, but they will be welcomed by long and medium wave DXers!

For all practical purposes GMT is the same as Universal Time Co-Ordinated (UTC), the time system adopted by International Broadcasters and quoted in LM&S. If you have a small clock beside your receiver set to UTC, do not adjust it on that day.

## Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless stated, all logs compiled in the four week period ending August 31.

Many listeners ignore the l.w. band because they believe that only a set number of broadcasts can be received at a particular location. Whilst this may be so during daylight, a different situation arises after sunset, because most of the channels are shared by two or more stations and some of them can be received via sky wave paths after dark. The propagation pattern is very similar to that encountered in the m.w. band. In addition, it is sometimes possible to receive the broadcasts from a distant station on a shared channel when the local station is off the air for maintenance!

A comparison between reception during daylight and after dark during August was made by **Fred Pallant** in Storrington. He found that the broadcasts from Donebach 153, Allouis 162, Kaliningrad 171, Oranienburg 177, Saarlouis 183, Munich 207, RMC via Roumoules 216, Junglinster 234, Kalundborg 243 and Atlantic 252 could be received at any time of the day, but the strength of each signal was affected at night by the arrival of the sky wave component. After dark, the broadcasts from Bechar 153, Medi 1- Nardor 171, Konstantinow 225, Tipaza 252, Burg 261, Topolna 270 and Minsk 279 reached him via sky wave paths. A similar check at your location could be worthwhile!

## Medium Wave Reports

A visit to N.Wales during the period August 7-9 enabled **Sid Morris** (Rowley Regis) to try m.w. transatlantic DXing at one of his favourite locations, namely Cwm Nantcol, Gwynedd. Using a Sangean ATS-803A portable with the car radio antenna he picked up two broadcasts from the USA and two from Canada. The first became audible on 880 and proved to be WCBS in New York. Their signal was SIO343 at 0120. Next, was CBD in St.John, NB 1110, SIO333. Potent signals were noted from WKNR Cleveland, OH on 1220, they peaked SIO434 at 0150. At 0210 he logged CKCM in Grand Falls, NF on 620 as SIO343.

Some of the signals from stations in N.Africa have also reached the UK via sky wave paths after dark, see chart. Once again, many signals from Spain have been received here. **George Millmore** (IOW) says, "The number of Spanish stations that can be heard here seems to be endless, several can be heard on most days during daylight". After dark he logged for the first time RNE-5 Barcelona 576 (50kW) SIO323; Miramar, Portugal 783 (50kW) SIO434; SER Alicante 1026 (3kW) SIO222; also SER Granada 1080 (5kW) as SIO222.

Whilst visiting Buckfastleigh and Bristol, **Tim Bucknall** (Congleton) seized the opportunity to log some of the local radio stations in the West of England, see chart. Low noise levels and a surprising lack of continental interference enabled **John Wells** (East Grinstead) to log for the first time ILR R.Hallam via Crimpsall on 990 (0.25kW) and BBC R.Sheffield on 1035 (1kW). He says, "I listened to the latter for a long time before the station ident came up!"

## Short Wave Reports

Some improvement in the propagation conditions was noted in August, but from time to time the solar activity

## Medium Wave Chart

| Freq kHz | Station | Country | Power kW | Listener |
|---|---|---|---|---|
| 520 | Hof-Saale | Germany | 0.2 | G* |
| 531 | Ain Beida | Algeria | 600 | F* |
| 531 | Leipzig | Germany | 100 | G*,H |
| 531 | Oviedo | Spain | 10 | G*,H* |
| 540 | BRT-2 Wavre | Belgium | 150/50 | B,D*,G*,H,I,L |
| 540 | Solt | Hungary | 2000 | G* |
| 540 | Sidi Bennour | Morocco | 600 | G*,H* |
| 549 | Les Trembles | Algeria | 600 | G*,H* |
| 549 | DLF Bayreuth | Germany | 200 | B,D*,G*,H,I |
| 558 | Espoo | Finland | 100 | A*,G* |
| 558 | Valencia | Spain | 20 | D*,G* |
| 567 | Berlin | Germany | 100 | G* |
| 567 | RTE-1 Tullamore | Ireland (S) | 500 | B*,D*,H,I,K,L |
| 576 | Stuttgart | Germany | 500 | D*,G*,H* |
| 576 | RNE-5 Barcelona | Spain | 20 | G*,H* |
| 585 | FIP Paris | France | 8 | F,G*,H |
| 585 | RNE-1 Madrid | Spain | 200 | G*,H*,I*,K |
| 594 | Frankfurt | Germany | 1000/400 | D*,F,G*,H,I*,K* |
| 594 | Oujda-1 | Morocco | 100 | H* |
| 594 | Muge | Portugal | 100 | D*,G* |
| 603 | Sevilla | Spain | 20 | G*,H* |
| 603 | BBC Newcastle | UK | 2 | B,D,G*,Z |
| 612 | RTE-2 Athlone | Ireland (S) | 100 | H,I,K |
| 612 | Lerida | Spain | 10 | H |
| 621 | RTBF-1 Wavre | Belgium | 80 | D*,F,G*,H,I*,L |
| 621 | Barcelona | Spain | 10 | G*,H* |
| 630 | Vigra | Norway | 100 | G*,K* |
| 630 | Tunis-Djedeida | Tunisia | 600 | G* |
| 639 | La Coruna | Spain | 100 | G*,H* |
| 648 | P. de Mallorca | Spain | 10 | G* |
| 648 | BBC Orfordness | UK | 500 | B,F,G*,H,I,L |
| 657 | Burg | Germany | 250 | G*,K* |
| 657 | RCE-2 Madrid | Spain | 20 | G*,H* |
| 657 | BBC Wrexham | UK | 2 | G*,I |
| 666 | Bodenseesender | Germany | 300/180 | G* |
| 666 | Lisboa | Portugal | 135 | H* |
| 675 | Marseille | France | 600 | G*,I |
| 675 | Hilversum-3 Lopic | Holland | 120 | B,F,G,H,L,Z |
| 684 | RNE-1 Sevilla | Spain | 250 | G*,H*,K* |
| 684 | Beograd | Yugoslavia | 2000 | G* |
| 693 | Berlin | Germany | 250 | G* |
| 693 | BBC Droitwich | UK | 150 | I,K,L |
| 693 | BBC Startpoint | UK | 50 | C |
| 702 | Aachen/Flensburg | Germany | 5 | G* |
| 702 | Monte Carlo | Monaco | 300 | G* |
| 711 | Rennes 1 | France | 300 | F,H |
| 711 | Heidelberg | Germany | 5 | D*,G* |
| 711 | COPE Murcia | Spain | 5 | H* |
| 720 | Langenberg | Germany | 200 | H |
| 720 | Norte | Portugal | 100 | G* |
| 720 | BBC London | UK | 0.5 | F,H,K,Z |
| 729 | RTE-1 Cork | Ireland (S) | 10 | H,I,K* |
| 729 | Oviedo | Spain | 50 | D*,G*,H* |
| 738 | Paris | France | 4 | G* |
| 738 | Poznan | Poland | 300 | H* |
| 738 | RNE-1 Barcelona | Spain | 250 | D*,F,G*,H* |
| 747 | Hilversum-2 Flevo | Holland | 400 | B,D*,F,G*,H*,I,K*,L,Z |
| 756 | Brunswick | Germany | 800/200 | G*,H* |
| 756 | BBC-R4 Redruth | UK | 2 | C,H,K |
| 765 | Medvezhyegorsk | CIS | 150 | G* |
| 765 | Sottens | Switzerland | 500 | H*,I |
| 774 | BBC Enniskillen | Ireland (N) | 1 | G |
| 774 | BBC Plymouth | UK | 1 | C |
| 774 | RNE-1 S.Sebastian | Spain | 60 | G*,H* |
| 783 | Burg | Germany | 1000 | G*,H* |
| 783 | R.Porto, Miramar | Portugal | 100 | H* |
| 792 | Lingen | Germany | 5 | H* |
| 792 | Sevilla | Spain | 20 | A*,G*,H* |
| 801 | Munchen-Ismaning | Germany | 300 | G* |
| 810 | SER Madrid | Spain | 20 | H* |
| 810 | BBC Burghead | UK | 100 | K |
| 810 | BBC Westerglen | UK | 100 | C*,D*,G,H*,I,Z |
| 819 | Toulouse | France | 50 | G* |
| 819 | Warsaw | Poland | 300 | H* |
| 819 | San Sebastian | Spain | 5 | H* |
| 837 | Nancy | France | 200 | G* |
| 837 | R.Popular, Sevilla | Spain | 10 | G*,H* |
| 846 | Rome | Italy | 540 | G*,H*,I |
| 855 | Berlin | Germany | 100 | G* |
| 855 | Murcia | Spain | 125 | G*,H |
| 864 | Paris | France | 300 | D*,F,H,L |
| 873 | AFN via Frankfurt | Germany | 150 | D*,G*,H*,I |
| 873 | Zaragoza | Spain | 20 | G*,H* |
| 873 | R.Ulster | UK | 1 | F,G |
| 882 | BBC Washford | UK | 100 | C,D*,F,G,H,I,L |
| 891 | Algiers | Algeria | 600/300 | G*,H*,I* |
| 891 | Hulsberg | Holland | 20 | H* |
| 900 | Milan | Italy | 600 | A*,G*,H* |
| 900 | COPE-Bilbao | Spain | 10 | H* |
| 909 | BBC Brookmans Pk | UK | 140 | I |
| 909 | BBC-R5 Clevedon | UK | 50 | C |
| 909 | BBC-R5 Exeter | UK | 1 | C |
| 909 | BBC Moorside Ed. | UK | 200 | K |
| 918 | R.Intercont. | Spain | 20 | G*,H*,K* |
| 927 | BRT-1 Wolvertem | Belgium | 300 | G*,H,I,K,Z |
| 936 | Bremen | Germany | 100 | D*,G*,H* |
| 936 | Venezia | Italy | 20 | H* |
| 936 | SER Lerida | Spain | 2 | G* |
| 945 | Toulouse | France | 300 | G*,H* |
| 954 | RCE Madrid | Spain | 20 | D*,G*,H* |
| 963 | Sofia | Bulgaria | 150 | G* |
| 963 | Pori | Finland | 600 | G*,H*,I,K*,M |
| 972 | Hamburg | Germany | 300 | G*,H*,K* |
| 981 | Alger | Algeria | 600/300 | H*,I* |
| 990 | SER R.Bilbao | Spain | 10 | G* |
| 990 | BBC-Redmoss | UK | 1 | G* |
| 1008 | Hilversum-5 Flevo | Holland | 400 | B,D,F,G*,H*,L |
| 1017 | Rheinsender | Germany | 600 | B*,G*,H*,I* |
| 1026 | Graz-Dobl | Austria | 100 | G*,H* |
| 1026 | SER Alicante | Spain | 3 | H* |
| 1035 | Prog.3 Lisbon | Portugal | 120 | G*,H*,K* |
| 1044 | Dresden | Germany | 250 | D*,G*,H* |
| 1053 | COPE Zarogoza | Spain | 10 | G* |
| 1053 | BBC-R1 Droitwich | UK | 150 | I,K,L |
| 1062 | Kalundborg | Denmark | 250 | G*,H* |
| 1062 | Norte | Portugal | 100 | G* |
| 1071 | Brest | France | 20 | G*,H* |
| 1071 | Lille | France | 40 | F,L |
| 1080 | Katowice | Poland | 1500 | B,G*,H* |
| 1080 | SER-Granada | Spain | 5 | H* |
| 1089 | BBC Brookmans Pk | UK | 150 | B,I,K |
| 1089 | Krasnodar | CIS | 300 | G* |
| 1098 | Nitra | Czech | 1500 | B,G*,H* |
| 1098 | RNE-5 | Spain | 10 | G* |
| 1107 | AFN via Munich | Germany | 40 | G*,J* |
| 1107 | RNE-5 Caceres | Spain | 5 | H* |
| 1107 | BBC-R1 Wallasey | UK | 0.5 | Z |
| 1116 | SER-Pontevedra | Spain | 2 | B,G* |
| 1125 | La Louviere | Belgium | 20 | G*,H*,L |
| 1134 | Valencia | Spain | 10 | H* |
| 1134 | Zadar | Yugoslavia | 1200 | B,D*,G*,H*,J* |
| 1143 | AFN via Stuttgart | Germany | 10 | G* |
| 1143 | Messina | Italy | 6 | G*,H* |
| 1143 | Kaliningrad | Russia | 150 | G* |
| 1152 | RNE-5 | Spain | 10 | G* |
| 1161 | Stara Zagora | Bulgaria | 500 | G* |
| 1161 | Strasbourg (F.Int) | France | 200 | G* |
| 1179 | Santiago | Spain | 10 | G* |
| 1179 | Solvesborg | Sweden | 600 | B*,G*,H*,I |
| 1188 | Kuurne | Belgium | 5 | D*,G*,H |
| 1197 | VOA via Munich | Germany | 300 | G* |
| 1197 | Vitoria | Spain | 5 | H* |
| 1206 | Wroclaw | Poland | 200 | B,G*,H* |
| 1215 | COPE Castellon | Spain | 2 | G* |
| 1224 | Vidin | Bulgaria | 500 | G*,H* |
| 1233 | Liege | Belgium | 5 | H* |
| 1233 | Melnik | Czech | 400 | G* |
| 1251 | Huisberg | Netherlands | 10 | G* |
| 1260 | VOA via Rhodes | Greece | 500 | G* |
| 1260 | Valencia | Spain | 20 | G*,H* |
| 1269 | Neuminster | Germany | 600 | D*,G*,H*,I |
| 1278 | Strasbourg | France | 300 | G* |
| 1278 | RTE-2 Dublin/Cork | Ireland (S) | 10 | A*,G*,H*,K,Z |
| 1287 | Litomysl/Liblice | Czech | 300/200 | G*,H* |
| 1296 | San Sebastian | Spain | 5 | G* |
| 1296 | BBC Orfordness | UK | 500 | G*,H*,K* |
| 1305 | Rzeszow | Poland | 100 | G* |
| 1305 | Orense (RNE5) | Spain | 5 | G* |
| 1314 | Kvitsoy | Norway | 1200 | B*,D,G*,H*,I,K*,M* |
| 1323 | R.Moscow | Germany | 150 | G* |
| 1332 | Rome | Italy | 300 | G*,H* |
| 1341 | Lakihegy | Hungary | 300 | G* |
| 1341 | BBC.Lisnagarvey. | Ireland (N) | 100 | B*,D,E*,H*,I,K,Z |
| 1350 | Nancy/Nice | France | 100 | G*,H* |
| 1359 | Berlin | Germany | 250/100 | G* |
| 1368 | Manx R., Foxdale | IOM | 20 | C*,G*,K,Z |
| 1377 | Lille | France | 300 | F,G*,H,L |
| 1386 | Kaliningrad | Russia | 500 | B*,D*,G*,H* |
| 1395 | R.Tirana | Albania | 1000 | B*,D*,G*,H* |
| 1404 | Brest | France | 20 | G*,H |
| 1413 | RCE Zaragoza | Spain | 20 | G*,H* |
| 1422 | Heusweiler | Germany | 1200/600 | B*,D*,G*,H*,I*,K* |
| 1431 | Dresden | Germany | 250 | G* |
| 1440 | RTL Marnach | Luxembourg | 1200 | G*,H |
| 1449 | Berlin | Germany | 5 | G* |
| 1467 | TWR Monte Carlo | Monaco | 1000/400 | B*,D*,F*,G*,H*,I,K* |
| 1476 | Wien-Bisamberg | Austria | 600 | D*,G*,H*,I |
| 1485 | BBC-R1 Bournemouth | UK | 2 | C |
| 1494 | Clermont-Ferrand | France | 20 | G*,H* |
| 1494 | St.Petersburg | Russia | 1000 | G* |
| 1503 | Stargard | Poland | 300 | B,F*,G*,H*,N* |
| 1512 | BRT Wolvertem | Belgium | 600 | B,D*,F,G*,H,I,L,N* |
| 1521 | Kosice | Czech | 600 | D*,G*,H* |
| 1530 | Vatican R., Rome | Italy | 150/450 | B*,F*,G*,H*,K* |
| 1539 | Mainflingen | Germany | 700 | D*,F*,G*,H*,K* |
| 1539 | Valladolid | Spain | 5 | H* |
| 1557 | Nice | France | 300 | G* |
| 1566 | Sarnen | Switzerland | 300 | G* |
| 1575 | Burg | Germany | 250 | B*,G*,I |
| 1575 | Genoa | Italy | 50 | D*,H* |
| 1593 | Langenberg | Germany | 400/800 | D*,G*,H*,I*,K* |
| 1602 | Vitoria | Spain | 10 | H* |
| 1611 | Vatican R., Rome | Italy | 5 | G* |

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

**Listeners:**
A: Leo Barr, Sunderland.
B: Vera Brindley, Woodhall Spa.
C: Tim Bucknall, Congleton.
D: Scott Caldwell, Warrington.
E: Francis Hearne, Bristol.
F: Sheila Hughes, Morden.
G: Eddie McKeown, Newry.
H: George Millmore, Wootton IOW
I: Sid Morris, Rowley Regis.
J: Stephen Smith, Cwmbran.
K: Tom Smyth, Co.Fermanagh
L: Phil Townsend, E.London.
M: Edward Turnbull, Holland.
N: Michael Williams, Redhill.
Z: Neil Clarke, Bury.

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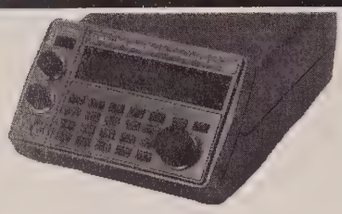

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- Autospec – Mk's I and II with all known interleaves
- DUP-ARQ Artrac – 125 Baud Simplex ARQ
- Twinplex – 100 Baud F7BC Simplex ARQ
- ASCII – CCITT 5, variable character lengths/parity
- ARQ6-90/98 – 200 Baud Simplex ARQ
- SI-ARQ/ARQ-S – ARQ1000 simplex
- SWED-ARQ/ARQ-SWE – CCIR 518 variant
- ARQ-E/ARQ1000 Duplex
- ARQ-N – ARQ1000 Duplex variant
- ARQ-E3 – CCIR 519 variant
- POL-ARQ – 100 baud Duplex ARQ
- TDM242/ARQ-M2/4-242 CCIR 242 with 1/2/4 channels
- TDM342/ARQ-M2/4 CCIR 342-2 with 1/2/4 channels
- FEC-A – FEC100A/FEC101
- FEC-S – FEC1000 Simplex
- Sports info. 300 Baud ASCII F7BC
- Hellschreiber – Synch./Asynch.
- Sitor RAW – (Normal Sitor but without synchronisation)
- ARQ6-70
- Baudot F7BBN
- Pactor – coming soon!

All the above modes are pre-set with the most commonly seen baudrate setting and number of channels which can be easily changed at will whilst decoding. Multi-channel systems display ALL channels on screen ***at the same time.*** Split screen with one window continually displaying channel control signal status e.g. idle Alphas/Beta/RQ's etc, along with all system parameter settings e.g. unshift on space, ***Shift on Space,*** multiple carriage returns inhibit, auto receiver drift compensation, printer on, system sub-mode. Any transmitted error correction information is used to minimise received errors. Baudot and Sitor both react correctly to third shift signals (e.g. Cryillic) to generate ungarbled text unlike some other decoders which get 'stuck' in figures mode!

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## Local Radio Chart

**Listeners:**
A: Leo Barr, Sunderland.
B: Vera Brindley, Woodhall Spa.
C: Tim Bucknall, Bristol.
D: Tim Bucknall, Buckfastleigh.
E: Scott Caldwell, Warrington.
F: Francis Hearne, N.Bristol.
G: Sheila Hughes, Morden.
H: Rhoderick Illman, Oxted.
I: Eddie McKeown, Newry.
J: George Millmore, Wootton, IOW.
K: Sid Morris, Rowley Regis.
L: Tom Smyth, Co.Fermanagh.
M: Phil Townsend, E.London.
N: John Wells, East Grinstead.
Z: Neil Clarke, Bury.

| Freq kHz | Station | ILR BBC | e.m.r.p (kW) | Listener |
|---|---|---|---|---|
| 558 | Spectrum R. | I | 7.50 | D,G*,J,K,N |
| 585 | R.Solway | B | 2.00 | I*,Z |
| 603 | Invicta Snd(Coast). | I | 0.10 | J,K,M,N |
| 630 | R.Bedfordshire | B | 0.20 | B,F,G,J,K,M,N |
| 630 | R.Cornwall | B | 2.00 | D,J,N |
| 657 | R.Clwyd | B | 2.00 | C,J,K,L*,N,Z |
| 657 | R.Cornwall | B | 0.50 | C,D,J |
| 666 | DevonAir R. | I | 0.34 | C,D,G,I*,J,N |
| 666 | R.York | B | 0.80 | B,E,I*,N,Z |
| 729 | BBC Essex | B | 0.20 | G,J,L,M,N |
| 738 | Hereford/Worcester | B | 0.037 | G,J,K,N |
| 756 | R.Cumbria | B | 1.00 | I,L,Z |
| 765 | BBC Essex | B | 0.50 | A,B,G,I*,J,K*,M,N |
| 774 | R.Kent | B | 0.70 | G,J,M,N |
| 774 | R.Leeds | B | 0.50 | B,E,Z |
| 774 | Severn Sound (3CR) | I | 0.14 | C,J,K,N |
| 792 | Chiltern R. | I | 0.27 | B,J,K,M,N |
| 801 | R.Devon | B | 2.00 | D,F,G,I*,J,N |
| 828 | Chiltern Radio | I | 0.20 | M,N |
| 828 | R.Aire (Magic 828) | I | 0.12 | B,E,Z |
| 828 | 2CR | I | 0.27 | D,J,N |
| 837 | R.Cumbria | B | 1.50 | E,I,Z |
| 837 | R.Leicester | B | 0.45 | B,G,J,K,M,N |
| 855 | R.Devon | B | 1.00 | D,J,N |
| 855 | R.Lancashire | B | 1.50 | E,I |
| 855 | R.Norfolk | B | 1.50 | A,B,G,M,N |
| 873 | R.Norfolk | B | 0.30 | B,G,J,M,N |
| 936 | GWR (Brunel R.) | I | 0.18 | D,J,K,N |
| 945 | R.Trent (GEM-AM) | I | 0.20 | B*,E,I*,J,K,N,Z |
| 954 | DevonAir R. | I | 0.32 | D,G,J,N |
| 954 | R.Wyvern | I | 0.16 | G,K,N |
| 990 | WABC (Nice & Easy) | I | 0.09 | E,K,N |
| 990 | R.Devon | B | 1.00 | D,G,J,N |
| 990 | Hallam R.(Gt.Yks) | I | 0.25 | B,N |
| 999 | R.Solent | B | 1.00 | D,J,N |
| 999 | R.Trent (GEM-AM) | I | 0.25 | N |
| 999 | Red Rose R. | I | 0.80 | E,I |
| 1017 | WABC Shrewsbury | I | 0.70 | G,J,K,N,Z |
| 1026 | Downtown R. | I | 1.70 | A,L |
| 1026 | R.Cambridgeshire | B | 0.50 | B,G,M,N |
| 1026 | R.Jersey | B | 1.00 | D,G,J,N |
| 1035 | R.Kent | B | 0.50 | G,J,M,N |
| 1035 | R.Sheffield | B | 1.00 | B,E,N |
| 1035 | West Sound | I | 0.32 | I* |
| 1107 | Moray Firth R. | I | 1.50 | I |
| 1116 | R.Derby | B | 1.20 | B,E,I*,K,N,Z |
| 1116 | R.Guernsey | B | 0.50 | D,G,J,N |
| 1152 | BRMB (Xtra-AM) | I | 3.00 | A,F,K |
| 1152 | LBC (L.Talkback R). | I | 23.50 | G,J,N |
| 1152 | Piccadilly R. | I | 1.50 | E |
| 1152 | Plymouth Sound | I | 0.32 | D |
| 1152 | R.Broadland | I | 0.83 | N |
| 1161 | GWR (Brunel R.) | I | 0.16 | D,I*,J,N |
| 1161 | R.Bedfordshire | B | 0.10 | M,N |
| 1161 | R.Sussex | B | 1.00 | D,G,J,N |
| 1161 | Viking R.(Gt.Yks) | I | 0.35 | Z |
| 1170 | Ocean Sd.(SCR) | I | 0.12 | J,N |
| 1170 | R.Orwell (SGR-FM) | I | 0.28 | M,N |
| 1170 | Signal R. | I | 0.20 | E,K |
| 1170 | Swansea Sound | I | 0.58 | D,I* |
| 1242 | Invicta Snd(Coast). | I | 0.32 | M,N |
| 1242 | Isle of Wight R. | I | 0.50 | D,I,J,L*,N |
| 1251 | Saxon R. (SGR-FM) | I | 0.76 | I*,M,N |
| 1260 | GWR (Brunel R.) | I | 1.60 | D,J,N |
| 1260 | Leicester (GEM-AM). | I | 0.29 | K,M,N |
| 1260 | Marcher Sound | I | 0.64 | E,I*,L*,Z |
| 1278 | Pennine R(Gt.Yks) | I | 0.43 | Z |
| 1305 | Red Dragon (Touch). | I | 0.20 | C,D,J,N |
| 1305 | R.Hallam (Gt.Yks) | I | 0.15 | Z |
| 1323 | R.Bristol (Som.Snd) | B | 0.63 | D,N |
| 1323 | S'thern Sound(SCR). | I | 0.50 | J,M,N |
| 1332 | Hereward R.(WGMS) | I | 0.60 | I*,J*,M,N |
| 1332 | Wiltshire Sound | B | 0.30 | I*,J,N |
| 1359 | Essex R.(Breeze) | I | 0.28 | M,N |
| 1359 | Mercia Snd(Xtra-AM) | I | 0.27 | E,K,N |
| 1359 | Red Dragon (Touch). | I | 0.20 | C,D |
| 1359 | R.Solent | B | 0.85 | D,I*,J |
| 1368 | R.Lincolnshire | B | 2.00 | N |
| 1368 | R.Sussex | B | 0.50 | G,J,M,N |
| 1368 | Wiltshire Sound | B | 0.10 | I*,J |
| 1413 | Sunrise R. | I | 0.125 | J,M,N |
| 1431 | Essex R.(Breeze) | I | 0.35 | N |
| 1431 | R.210 (Cl. Gold) | I | 0.14 | I*,J,N |
| 1449 | R.Peterboro/Cambs | B | 0.15 | J,N |
| 1458 | GLR | B | 50.00 | J,N |
| 1458 | R.Cumbria | B | 0.50 | I |
| 1458 | R.Devon | B | 2.00 | D,J,N |
| 1458 | R.Newcastle | B | 2.00 | I |
| 1476 | C'ty Snd(1st Gold). | I | 0.50 | G*,J,M,N |
| 1485 | R.Humberside | B | 1.00 | I* |
| 1485 | R.Merseyside | B | 1.20 | E,I*,K*,L,N |
| 1485 | R.Sussex | B | 1.00 | D,G,J,M,N |
| 1503 | R.Stoke-on-Trent | B | 1.00 | D,I*,J,K,N,Z |
| 1521 | R.Mercury | I | 0.64 | I*,J,M |
| 1530 | Pennine R(Gt.Yks) | I | 0.74 | E,I* |
| 1530 | R.Essex | B | 0.15 | M,N |
| 1530 | R.Wyvern | I | 0.52 | J,K,N |
| 1548 | Capital R. (Gold) | I | 97.50 | D,G*,H*,J,N |
| 1548 | R.Bristol | B | 5.00 | D,I*,J,L |
| 1548 | R.City (City Talk). | I | 4.40 | E |
| 1557 | Chiltern R.(Gold) | I | 0.76 | I*,K* |
| 1557 | Ocean Sound (SCR) | I | 0.50 | I*,J,N |
| 1557 | R.Lancashire | B | 0.25 | E |
| 1557 | Tendring R.(Mellow) | I | ? | N |
| 1584 | R.Nottingham | B | 1.00 | E,G,I*,N,Z |
| 1584 | R.Shropshire | B | 0.50 | K |
| 1584 | R.Tay | I | 0.21 | I* |
| 1602 | R.Kent | B | 0.25 | G,I*,J,M,N |

Note: Entries marked * were logged during darkness.All other entries were logged during daylight or at dawn/dusk.

resulted in sudden ionospheric disturbances (s.i.d.) which disrupted reception.

The **25MHz (11m)** band was most affected by the solar activity and daily variations in propagation were evident. Although R.Australia's broadcasts to Japan and China via Darwin on 25.750 (Eng 0800-0900) reached the UK via a trans-polar (Arctic) route, reception was very erratic. At 0830 their signal was rated SINPO 25434 by **Richard Radford-Reynolds** in Guildford.

Several other broadcasters use this band to reach listeners in areas outside Europe, but reception here is unreliable because their signals arrive via back scatter and other modes. Whilst checking the band in Edinburgh, **Kenneth Buck** logged RFI via Issoudun 25.820 (Fr to E.Africa 0700-1550) as SIO254 at 1040; UAE R, Abu Dhabi 25.690 (Ar to ? 0900-1600) as SIO354 at 1050; DW via Julich 25.740 (Ger to M.East, E.Asia 1100-1355) as SIO252 at 1115. Over in Co.Down, **Eddie McKeown** (Newry) monitored the Sunday morning church service broadcast by R.Nederlands on 25.940 (Du to W.Africa 1030-1115). It reached him in bursts via back scatter, the best peaked 34412 at 1107.

Very poor conditions were noted in Canada by **Alan Roberts** (Quebec). An occasional carrier was received on 25.690, but nothing was heard on 25.740. On several occasions he picked up the carrier from RFI on 25.820, but it was so weak that the modulation could only be detected on two days. The best conditions occurred on August 22, when RFI peaked 25222 at 1540.

Two of R.Australia's **21MHz (13m)** broadcasts reached the UK some mornings: Carnarvon on 21.590 (Eng to Pacific areas 0100-0900) 44434 at 0710 by **Ernest Randall** in Huddersfield; Darwin on 21.725 (Eng to S.Asia 0800-1300) 34223 at 0915 in Newry. Also received here during the morning were R.Japan via Moyabi 21.575 (Eng, Jap to Europe 0700-0900) SIO444 at 0715 by **Bryan Kimber** in Hereford; also 21.640 (Jap to Europe, M.East, Africa 0830-0900) 55544 at 0843 in Guildford; BBC via Tsang Tsui, Hong Kong 21.715 (Eng to C.Asia 0100-0900) 33332 at 0827 by **Rhoderick Illman** in Oxted; R.Pakistan, Islamabad 21.520 (Eng to Europe 0800-0845) SIO444 at 0840 by **Bill Clark** in Rotherham; also 21.520 (Eng to Europe 1100-1120) 44444 at 1111 by **David Edwardson** in Wallsend; AIR via Aligarh 21.735 (Eng to NE.Asia 1000-1100, Th to Thailand 1115-1200) 43333 at 1020 by **Robert Connolly** in Kilkeel.

During the afternoon, BSKSA Riyadh, Saudi Arabia 21.505 (Ar [Home Service] 1030-1700) 45444 at 1319 by **John Eaton** in Woking; BBC via Ascension Is 21.660 (Eng to Africa 0900-1745) 33433 at 1409 by **Leo Barr** in Sunderland; HCJB, Ecuador 21.455 (world-wide u.s.b. + p.c.) SIO222 at 1525 by **Ted Walden-Vincent** in Gt.Yarmouth; UAE R.Dubai 21.605 (Ar, Eng to Europe 0615-1645) 44444 at 1030 by **Sheila Hughes** in Morden; RCI via Sackville 21.545 (Eng to Europe 1600-1629) 55555 at 1625 by **Darran Taplin** in Brenchley.

Later, R.Kuwait 21.675 (Ar to Europe, USA 1400?-?) 23222 at 1740 by **Vera Brindley** in Woodhall Spa; R.Nederlands via Bonaire 21.590 (Eng to Africa 1730-2025) 44433 at 1804 by **Ken Milne** in Basingstoke; WYFR Okeechobee 21.500 (Eng to Europe, Africa 1700-1900) SIO444 at 1805 by **John Coulter** in Winchester; HCJB, Ecuador 21.480 (Eng to Europe 1900-?) 55544 at 1950 by **John Nash** in Brighton; WCSN Scotts Corner 21.545 (Eng to Africa 1800-2000) 33333 at 1950 by **Peter Pollard** in Rugby; VOA via Greenville 21.485 (Eng to Africa 2000-2200) 43443 at 2023 by **Charles Beanland** in Gibraltar; VOFC Taiwan via Okeechobee 21.720 (Eng to Europe 2200-2300) 44344 at 2210 by **Chris Shorten** in Norwich.

The **17MHz (16m)** broadcasts from R.New Zealand Int. via Rangataiki 17.770 (Eng to Pacific areas 2130-0650) have reached the UK quite well during the early hours of the morning. At 0445 they peaked 44344 in Norwich. Later, **Cyril Kellam** (Sheffield) noted them as SIO433 at 0630. R.Australia's broadcast to SE.Asia via Carnarvon on 17.750 (Eng 0000-0400) has also reached our shores. In Worthing, **Ron Damp** logged it as 23222 at 0300.

Also received here during the morning were UAE R, Abu Dhabi 17.855 (Ar to Europe 0600-0900), rated 33323 at 0627 by **Ron Galliers** in N.London; R.Romania Int, Bucharest 17.720 (Eng to Pacific areas 0645-0715) SIO322 at 0700 by **Francis Hearne** in N.Bristol; Africa No.1, Gabon 17.630 (Fr, Eng to W.Africa 0700-1600) SIO433 at 0714 in Rotherham; R.Finland via Pori 17.800 (Eng to Japan, Far East 0830-0900) 44444 at 0845 by **Peter Polson** in St.Andrews; Voice of Israel, Jerusalem 17.545 (Eng, Fr to C/N.America, W.Europe 1000-1100) SIO434 at 1024 by **Michael Williams** in Redhill.

After mid-day, R.Sweden via

**Listeners:**
A: Vera Brindley, Woodhall Spa.
B: Scott Caldwell, Warrington.
C: Francis Hearne, Bristol.
D: Sheila Hughes, Morden.
E: Eddie McKeown, Newry.
F: George Millmore, Wootton, IOW.
G: Sid Morris, Rowley Regis.
H: Fred Pallant, Storrington.
I: Harry Richards, Barton-on-Humber.
J: Tom Smyth, Co.Fermanagh.
K: Phil Townsend, E.London.

## Long Wave Chart

| Freq kHz | Station | Country | Power (kW) | Listener |
|---|---|---|---|---|
| 153 | Bechar | Algeria | 1000 | H* |
| 153 | Donebach | Germany | 500 | A,B,D,E*,F,G*,H,I*,J*,K |
| 153 | Brasov | Romania | 1200 | E*,F |
| 162 | Allouis | France | 2000 | A,D,E*,F,G,H,I*,J,K |
| 171 | Kaliningrad | Russia | 1000 | D,E*,F,G,H,I*,J* |
| 171 | Medi 1-Nador | Morocco | 2000 | H* |
| 177 | Oranienburg | Germany | 750 | A,D,E*,F,G*,H,I* |
| 183 | Saarlouis | Germany | 2000 | A,B,D,E*,F,G,H,I*,J*,K |
| 198 | BBC Droitwich | UK | 500 | A*,B,D,E*,F,G,H,I*,J,K |
| 207 | Munich | Germany | 500 | E*,F,H,I*,J* |
| 216 | RMC Roumoules | S.France | 1400 | A,B*,E*,F,G,H,I* |
| 216 | Oslo | Norway | 200 | D*,E* |
| 225 | Konstantinow | Poland | 2000 | E*,F,G,H*,I*,J* |
| 234 | Junglinster | Luxembourg | 2000 | A,D,E*,F,G,H,I*,K |
| 234 | St.Petersburg | Russia | 1000 | E*,I* |
| 243 | Kalundborg | Denmark | 300 | A,B,D,E*,F*,G*,H,I*,K |
| 252 | Tipaza | Algeria | 1500 | D*,F*,H*,I* |
| 252 | Atlantic 252 | S.Ireland | 500 | C,D*,E,F,G,H,I*,J,K |
| 261 | Burg | Germany | 200 | A,B,D,F,H* |
| 261 | Moscow | Russia | 2000 | D*,E*,G,H,I*,K |
| 270 | Topolna | Czechoslovakia | 1500 | B*,D*,E*,F*,G,H*,I* |
| 279 | Minsk | CIS | 500 | E*,F*,G*,H*,I* |

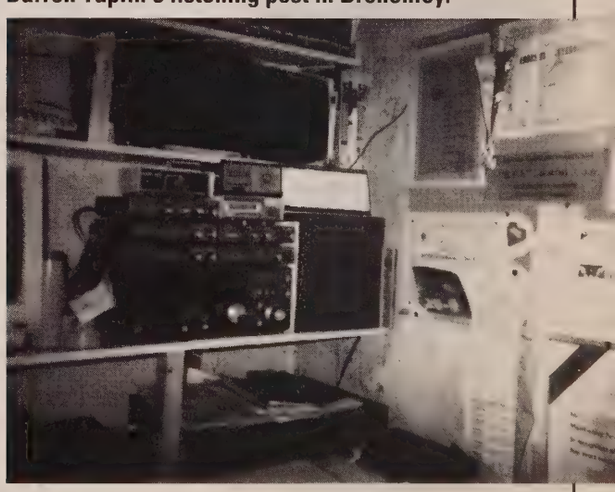
Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dawn/dusk.

## Tropical Bands

| Freq MHz | Station | Country | UTC | DXer |
|---|---|---|---|---|
| 2.310 | ABC Alice Springs | Australia | 2020 | H |
| 2.325 | ABC Tennant Creek | Australia | 2030 | H |
| 2.560 | Xinjiang | China | 2250 | H |
| 3.200 | TWR | Swaziland | 1940 | R |
| 3.215 | R.Orange | S.Africa | 0220 | K,P,R |
| 3.270 | SWABC 1, Namibia | S.W.Africa | 0205 | R |
| 3.300 | R.Cultural | Guatemala | 0127 | K,M,R |
| 3.320 | R.Orion | S.Africa | 0010 | M,R |
| 3.320 | R.Suid Afrika | S.Africa | 0055 | F |
| 3.325 | FRCN Lagos | Nigeria | 2130 | K,R |
| 3.355 | R.Nac.Luanda | Angola | 1950 | R |
| 3.365 | R.Rebelde, La Julia | Cuba | 0400 | K |
| 3.365 | GBC Radio 2 | Ghana | 2103 | B,D,H,K,L,M,N,O,R |
| 3.915 | BBC Kranji | Singapore | 2055 | G |
| 3.955 | BBC Skelton | England | 0403 | J,K |
| 3.965 | RFI Paris | France | 1912 | D,F,G,I,J,K,L,Q |
| 3.975 | BBC Skelton | England | 1630 | G,K |
| 3.980 | VOA Munich | W.Germany | 1910 | G,I,J,K,O,Q |
| 3.985 | R.Beijing, China | via SRI Berne | 2055 | F,G,H |
| 3.985 | SRI Berne | Switzerland | 0401 | G,I,J,K,Q |
| 3.995 | DW Cologne (Julich) | W.Germany | 2115 | G,K |
| 4.010 | R.Frunze 1 | Kirghizia | 2340 | K |
| 4.055 | R.Moskva 1 (Kalinin) | Russia | 2010 | B,F,K |
| 4.409 | R.Eco, Reyes | Bolivia | 0030 | R |
| 4.420 | R.Reyes | Bolivia | 2357 | M |
| 4.500 | Xinjiang | China | 2155 | H,K,R |
| 4.635 | R.Dushanbe | Tadzhikistan | 2341 | K |
| 4.650 | R.Santa Ana | Bolivia | 2257 | H,M |
| 4.700 | R.Waira, Chota | Peru | 2345 | F |
| 4.735 | Xinjiang | China | 2204 | G,H,K,M |
| 4.740 | Ashkhabad | Russia | 2312 | K |
| 4.750 | PBS Xizang, Lhasa | China | 2320 | G |
| 4.765 | Brazzaville | Congo | 2025 | C,E,I,J,K,L,N,O |
| 4.770 | FRCN Kaduna | Nigeria | 2105 | F,G,H,K,L,N,S |
| 4.780 | RTD | Djibouti | 1907 | N |
| 4.790 | Azad Kashmir R. | Pakistan | 0045 | K |
| 4.790 | R.Atlantida | Peru | 0020 | R |
| 4.790 | TWR Manzini | Swaziland | 1825 | N |
| 4.795 | R.Douala | Cameroon | 1907 | B,C,F,K,L,M,N |
| 4.795 | La Voz de los Caras | Ecuador | 0100 | R |
| 4.800 | LNBS Lesotho | Maseru | 1905 | B,K,N |
| 4.805 | R.Nac.Amazonas | Brazil | 2304 | H,I,M |
| 4.810 | R.Moskva 1 (Yerevan) | Armenia | 1918 | B,K,N |
| 4.815 | R.diff TV Burkina | Ouagadougou | 2028 | N,R |
| 4.820 | La Voz Evangelica | Honduras | 0115 | M,P |
| 4.820 | R.Moskva 4 (Khanty-M) | Russia | 2020 | B,G,K |
| 4.825 | R.Cancao Nova | Brazil | 2330 | G |
| 4.825 | V of Selva | Peru | 0225 | R |
| 4.825 | R.Moscow (Yakutsk) | Siberia | 2250 | F,K |
| 4.825 | Ashkhabad | Turkmenia | 1921 | B,J |
| 4.830 | Gaborone | Botswana | 0440 | K |
| 4.830 | R.Tachira | Venezuela | 2318 | G,K,M,P |
| 4.835 | R.Tezulutlan, Coban | Guatemala | 0153 | M |
| 4.835 | RTM Bamako | Mali | 2030 | B,D,E,F,I,K,L,M,N,P |
| 4.840 | Heilongjiang, Harbin | China | 2056 | N |
| 4.845 | R.Fides, La Paz | Bolivia | 0435 | R |
| 4.845 | ORTM Nouakchott | Mauritania | 2030 | E,F,I,K,L,N |
| 4.850 | R.Yaounde | Cameroon | 2145 | K,L |
| 4.850 | AIR Kohima | India | 1850 | B,N |
| 4.850 | Ulan Bator | Mongolia | 1950 | J |
| 4.850 | R.Tashkent 2 | Uzbekistan | 2045 | K,R |
| 4.860 | AIR New Delhi | India | 1850 | N |
| 4.860 | R.Moscow | Russia | 1955 | N |
| 4.865 | PBS Lanzhou | China | 2155 | G,K |
| 4.865 | V of Cinaruco | Colombia | 2335 | M |
| 4.870 | R.Cotonou | Benin | 1912 | B,K,L,M,N,R |
| 4.885 | R.Clube do Para | Brazil | 2332 | K,M |
| 4.885 | Voice of Kenya | Kenya | 1850 | N |
| 4.890 | RFI Paris | via Gabon | 0320 | K,R |
| 4.895 | R.Moscow (Kalinin) | Russia | 2034 | L,N |
| 4.905 | R.Nat.N'djamena | Chad | 1940 | I,K,L,N |
| 4.910 | V of P Kampuchea | Cambodia | 2230 | R |
| 4.915 | R.Anhanguera | Brazil | 2325 | H,M |
| 4.915 | R.Ghana, Accra | Ghana | 2020 | C,E,K,L,N |
| 4.915 | Voice of Kenya | Kenya | 1850 | D,N |
| 4.920 | ABC Brisbane | Australia | 2014 | N |
| 4.920 | R.Quito | Ecuador | 2345 | G |
| 4.930 | R.Moscow | Russia | 2036 | G,K,N |
| 4.935 | Voice of Kenya | Kenya | 1911 | B,H,K,L,N |
| 4.940 | R.Kiev 2 | Ukraine | 1925 | C,J,K,L,M,N |
| 4.950 | R.Nac.Luanda | Angola | 2015 | N |
| 4.958 | R.Baku | CIS | 2015 | K,N |
| 4.970 | R.Rumbos, Caracas | Venezuela | 0132 | H |
| 4.975 | R.Uganda, Kampala | Uganda | 2017 | N,R |
| 4.980 | Ecos del Torbes | Venezuela | 0137 | H,M |
| 4.985 | R.Brazil Central | Brazil | 0341 | K |
| 4.990 | Huanan 1, Changsa | China | 0044 | K |
| 4.990 | FRCN Lagos | Nigeria | 2232 | E,K,L |
| 4.990 | R.Ancash, Huaraz | Peru | 0155 | M |
| 5.005 | RTM Sibu, Sarawak | Malaysia | 2200 | R |
| 5.010 | R.Garoua | Cameroon | 2019 | B,H,K,L,N |
| 5.015 | R.Moskva 2 | CIS | 2035 | J |
| 5.035 | R.Aparecida | Brazil | 2042 | G |
| 5.035 | R.Bangui | C.Africa | 2041 | B,K |
| 5.035 | R.Alma Ata | Kazakshtan | 2040 | B,K,L,M |
| 5.040 | Vos del Upano, Macas | Ecuador | 2210 | G |
| 5.040 | R.Tbilisi 1 | CIS | 1940 | C,D,F |
| 5.045 | R.Cultura do Para | Brazil | 2217 | G,K |
| 5.047 | R.Togo, Lome | Togo | 2021 | I,K,N |
| 5.050 | Em Jesus Gran Poder | Ecuador | 0035 | R |
| 5.050 | R.Tanzania | Tanzania | 2057 | N |
| 5.055 | Faro del Caribe | Costa Rica | 0142 | J,M,R |
| 5.055 | RFO Cayenne(Matoury) | Fr Guiana | 0403 | K |
| 5.060 | PBS Xinjiang | China | 2310 | F |
| 5.065 | R.Candip, Bunia | Zaire | 1930 | R |
| 5.075 | Caracol Bogata | Colombia | 2325 | H,K |
| 5.097 | R.Eco, Iquitos | Peru | 0038 | R |
| 5.260 | R.Alma Ata 2 | CIS | 2004 | A,B,F,K,R |
| 5.290 | R.Moskva 1 | Siberia | 2225 | M |
| 5.580 | R.San Jose Chiquitos | Bolivia | 0230 | R |
| 5.800 | PBS Xinjiang | China | 2222 | M |

**DXers:**
A: Leo Barr, Sunderland.
B: Darren Beasley, Bridgwater.
C: Vera Brindley, Woodhall Spa.
D: Scott Caldwell, Warrington.
E: Bill Clark, Rotherham.
F: Robert Connolly, Kilkeel.
G: John Eaton, Woking.
H: David Edwardson, Wallsend.
I: Ron Galliers, N.London.
J: Sheila Hughes, Morden.
K: Eddie McKeown, Newry.
L: Sid Morris, Rowley Regis.
M: John Nash, Brighton.
N: Fred Pallant, Storrington.
O: Peter Pollard, Llanwrt Wells.
P: Alan Roberts, Quebec, Canada.
Q: Phil Townsend, E.London.
R: Jim Willett, Grimsby.
S: Michael Williams, Redhill.

**Darren Taplin's listening post in Brenchley.**



Horby? 17.870 (Eng to USA 1500-1600) rated 45554 at 1501 in Wallsend; RCI via Sackville 17.820 (Eng to Europe 1600-1629) 42232 at 1607 in Oxted; RFI via Issoudun, France 17.620 (Eng to Africa 1600-1700) 32343 at 1611 in Basingstoke; R.Pakistan, Islamabad 17.555 (Eng to M.East 1600-1630) SIO333 at 1630 in Gt.Yarmouth; WCSN Scotts Corner 17.510 (Eng to Africa 1600-1800) 44444 at 1634 in Brenchley.

During the evening R.Sofia, Bulgaria 17.780 (Eng to Europe 1730-1900) was rated 44444 at 1810 in Huddersfield; VOA via Tangier 17.895 (Eng to Africa 1600-2200) SIO455 at 1905 in Edinburgh; RCI via Sackville 17.875 (Eng to Europe 1900-1959) 55555 at 1945 in Brighton; R.Nederlands via Bonaire 17.605 (Eng to W.Africa 1930-2030) 55444 at 2025 by **Darren Beasley** in Bridgwater; R.Havana, Cuba 17.705 (Eng to Europe 2000-2100) 32323 at 2035 in Woodhall Spa; HCJB, Ecuador 17.790 (Cz, Sw, Ger, Fr, Eng, Sp to Europe 1800-2230) 34333 at 2130 in Newry; RCI via Sackville 17.875 (Eng to Europe 2100-2159) 54444 at 2155 in Kilkeel.

Later, VOA via Tinang 17.735 (Eng to E/S.E.Asia, Pacific areas 2100-0100) 35222 at 2229 in Woking; VOFC Taiwan via Okeechobee 17.750 (Eng to Europe 2200-2300) 55444 at 2231 by **Scott Caldwell** in Warrington; VOA via Munich 17.885 (Eng to M.East, N.Africa, Europe 2200-0000) 33233 at 2258 by **Robin Harvey** in Bourne; R.Cultura, Sao Paulo, Brazil 17.815 (Port 0800-0400) SIO333 at 2315 in Hereford.

Two of R.Australia's 15MHz (19m) broadcasts have often reached the UK in the morning: Shepparton 15.240 (Eng to Pacific areas 0030-0830) rated 32333 at 0726 in N.London; Darwin 15.170 (Eng, Chin to Asia 0900-1400) 32222 at 0913 in Newry. Much later, good reception of their Shepparton broadcast to New Guinea on 15.320 (Eng 2200-0730) has been noted, typically 43333 at 2255 in Woking.

Also received here during the morning were R.Romania Int, Bucharest 15.335 (Eng to Pacific areas 0645-0715) SIO433 at 0645 in N.Bristol; RTL Luxembourg 15.350 (Eng, Fr to USA 24hrs) 43433 at 0817 in Guildford; R.Austria Int via Moosbrunn 15.450 (Eng, Ger to Australia, NZ 0800-1100) SIO444 at 0845 in Redhill; RFO Papeete, Tahiti 15.170 (Fr, Tah to SE.Pacific 1600-0930) SIO333 at 0905 in Rotherham; RTV Congolaise, Brazzaville 15.190 (Fr to W.Africa 1100-1700) SIO333 at 1130 in Hereford.

After mid-day, R.Finland via Pori 15.400 (Eng to USA 1330-1400) was 54444 at 1330 in Worthing; Voice of Vietnam, Hanoi 15.010 (Eng to Far East 1330-1400) 23212 at 1357 in Woodhall Spa; R.Veritas Asia, Philippines 15.140 (Eng ident 1500, Pil 1505-1600) 43433 at 1505 in Bridgwater; Voice of Greece, Athens 15.650 (Gr, Eng to USA 1200-1250) SIO323 at 1235 by **Tom Smyth** in Co.Fermanagh; also 15.650 (Gr, Eng, Sw to Sweden, USA 1500-1550) 35543 at 1533 in Wallsend; BBC via Masirah Island 15.310 (Eng to M.East, India 0900-1830) SIO212 at 1611 by **Philip Rambaut** in Macclesfield; UAE R.Dubai 15.320 (Eng to N.Africa 1600-1640) 53343 at 1615 in Norwich; BBC via Mahe 15.420 (Eng to E.Africa 0300-1700) 33332 at 1619 in Oxted.

Later, Vatican R, Italy 15.090 (Eng, Fr to W.Africa 2000-2100) was 45545 at 2018 in Gibraltar; BBC via Ascension Is 15.400 (Eng to W/C.Africa 1500-2315) 43333 at 2054 in Basingstoke; R.Sofia, Bulgaria 15.330 (Eng to USA 2145-2315) SIO333 at 2210 by **Julian Wood** in Elgin; R.Iraq Int, Baghdad 15.210 (Eng to M.East, Europe) 33333 at 2215 by **Tony Singh** in Hitchin; BBC via Ascension Is 15.260 (Eng to S.America 2000-0330) 34343 at 2241 in Bourne.

Some of the broadcasts to Europe in this band stem from R.Sofia, Bulgaria 15.160 (Ger, Fr 0530-0700) 55545 at 0545 by **Edward Turnbull** in Gosforth; RFPI, Costa Rica 15.030 (Eng 1800-1200) SIO333 at 0716 in Sheffield; WCSN Scotts Corner 15.665 (Eng 1400-1600) SIO355 at 1500 in Edinburgh; VOIRI Tehran 15.260 (Eng 1830-1930) 54434 at 1830 in Huddersfield; Voice of Israel, Jerusalem 15.640 (Eng, Fr 1900-1955, also to USA) 55544 at 1900 in Brenchley; RNB Brasilia, Brazil 15.265 (Port, Eng, Ger 1630-2050) 43333 at 1835 in Morden; R.Damascus, Syria 15.095 (Eng 2005-2105) 44433 at 2027 in St.Andrews; R.Korea, Seoul 15.575 (Ger, Fr, Russ, Eng, Sp, Port, It 1800-2300) SIO223 at 2050 in Gt.Yarmouth; R.Ukraine, CIS 15.135 (Eng 2100-?) 44344 at 2101 in Sunderland; WYFR Okeechobee 15.566 (Eng 2200-2200, also to Africa) 22222 at 2140 in Rugby; RAE Buenos Aires, Argentina 15.345 (Ar, Eng, It, Fr, Ger, Sp 1700-0100) 43444 at 2230 in Kilkeel.

Good reception of R.Australia's **13MHz (22m)** Carnarvon broadcasts has been noted in the UK. Their transmission on 13.605 (Eng, Chin SE/N.Asia 0900-1200) was a strong 54444 at 0915 in Kilkeel. Later, 13.755 (Eng to S.Asia 1430-1900) rated 44444 at 1548 in Oxted.

Also active in this band are DW 13.770 (Eng to USA 0300-0350) 34433 at 0315 in Worthing; R.Austria Int via

Moosbrunn 13.730 (Ger, Fr, Eng, Sp to Europe 0400-1700) 43444 at 0827 in N.London; WWCR Nashville 13.815 (Eng to USA 1200-0000) SIO222 at 1200 in Macclesfield; Croation R, Zargreb 13.830 (Ident 1430, Cr) 44433 at 1420 in Brighton; SRI via Sottens 13.635 (Eng to Asia, Australia 1500-1530) 45444 at 1515 in Woking; KSDA, Guam 13.720 (Eng to S.Asia, E.Africa 1700-1900 Sat, Sun only) 22222 at 1752 in Newry; UAE R.Dubai 13.675 (Ar, Eng to Europe 0615-2100) SIO555 at 1800 in Edinburgh; R.Kuwait 13.620 (Eng to Europe, USA 1800-2100) 44444 at 1828 in Gibraltar and 55545 at 2058 in Bourne; ISBS, Iceland 13.855 (Ic to Europe 1855-1930) 55555 at 1900 in Norwich; Voice of Israel, Jerusalem 13.750 (Heb to Europe, Russia, USA 0300-2200) SIO444 at 1903 in Winchester; RCI via Sackville 13.605 (Eng to Europe 1900-1959) 54444 at 1905 in Huddersfield; DW via Julich 13.790 (Eng to W.Africa, M.East 1900-1950) 45333 at 1948 in Bridgwater; VOA via Selebi-Phikwe 13.710 (Eng to Africa 1600-?) 34444 at 2038 in St.Andrews; WHRI Red Lion 13.760 (Eng to Europe, Canada 1700-0000) 43333 at 2110 in Sunderland; UAE R, Abu Dhabi 13.605 (Eng to USA 2200-0000) 44444 at 2200 in Hitchin; RCI via Sackville 13.670 (Fr, Eng to Caribbean 2230-2329) SIO333 at 2328 in Redhill.

Some of the **11MHz (25m)** broadcasts to Europe originate from HCJB, Ecuador 11.730 (Eng 0700-0830) SIO433 at 0700 in Co.Fermanagh; WSCN Scotts Corner 11.705 (Eng 0800-1000) 22222 at 0830 in Rugby; R.Romania Int, Bucharest 11.940 (Eng 1300-1355) 32232 at 1347 in Woodhall Spa; R.Finland via Pori 11.820 (Eng 1405-1430) 45455 at 1410 in Gosforth; UAE R.Dubai 11.795 (Ar, Eng 1600-2100, also to N.Africa) SIO434 at 1730 in Macclesfield; AIR via Aligarh 11.620 (Eng 1745-1945) 44433 at 1844 in Brenchley and 33333 at 1919 in Gibraltar; Voice of Israel, Jerusalem 11.587 (Eng, Fr 1900-1955, also to C./N.America) 44444 at 1925 in Huddersfield; R.Damascus, Syria 12.085 (Eng 2005-2105) SIO444 at 2015 in Winchester; R.Beijing, China 11.500 (Eng 2000-2200) 35553 at 2040 in Wallsend; R.Japan via Moyabi 11.735 (Eng 2100-2200) SIO343 at 2155 in Edinburgh; R.Tirana, Albania 11.825 (Eng 2200-2230) 54444 at 2210 in Norwich; R.Yerevan, Armenia 11.920 (Eng News 2240) 42433 at 2250 in Newry; WWCR Nashville 12.160 (Eng 2200-0200) 54444 at 2305 in Kilkeel; R.Vilnius, Lithuania 11.780 (Eng 2300-?) 44444 at 2312 in Bourne.

Amongst those noted to other areas during the day were TWR Bonaire, Ned.Antilles 11.885 (Port to Brazil 0655-0940) 44433 at 0700 in Guildford; R.Nederlands via Bonaire 11.895 (Eng to Pacific 0730-1030) 44433 at 0925 in Worthing; R.Australia via Shepparton 11.880 (Eng to Asia 1300-1530) SIO423 at 1400 in Hereford; Voice of the Mediterranean, Malta 11.925 (Eng, Ar to N.Africa 1400-1600) 54444 at 1435 in Brighton; FEBC via Mahe 11.995 (Eng to S.Asia) 32222 at 1445 in Bridgwater; Polish R, Warsaw 11.840 (Eng to Africa? 1500-1555) SIO433 at 1550 in Redhill; R.Austria Int, via Moosbrunn 11.780 (Ger, Eng, Fr to S.E.Asia 1400-1700) 44333 at 1554 in Oxted; R.Pakistan, Islamabad 11.570 (Eng to M.East 1600-1630) 34444 at 1600 by **Phil Townsend** in N.London.

Later, R.New Zealand's broadcast to Pacific areas via Rangataiki 11.735 (Eng 1900-2130) was rated SIO322 at 1913 in Rotherham; DW via Trincomalee 11.785 (Eng to W.Africa 1900-1950) 32333 at 1925 in N.London; RTM Tanger, Morocco 11.920 (Eng, Fr to W.Africa, S.Europe 1900-0100) 44433 at 1950 in St.Andrews; Vatican R. Italy 11.625 (Eng, Fr to Africa 2000-2100) 32232 at 2025 in Basingstoke; BBC via Ascension Is 11.750 (Eng to S.America 2200-0330) 25333 at 2254 in Woking; R.Sofia, Bulgaria 11.660 (Eng to USA 2145-2315) SIO333 at 2304 in Elgin; R.Beijing, China 11.445 (Sp to Latin America 2300-0300) 34433 at 2314 in Sunderland.

Some **9MHz (31m)** broadcasts travel long distances to reach the UK. Those from WCSN Scotts Corner 9.840 (Eng to Europe 0600-0800) SIO444 at 0657 in Rotherham; HCJB, Ecuador 9.745 (Eng to S.Pacific 0730-1125) 33433 at 0827 in Brenchley; WYFR Okeechobee 9.605 (Port to Brazil 0800-1000) SIO222 at 0909 in Macclesfield; R.New Zealand 11.735 (Eng to Pacific areas 0800-1205) 32333 at 1000 in Bridgwater and 11121 at 1107 in Warrington; R.Australia via Darwin 9.540 (Eng to Asia 1430-1900) 54544 at 1704 in Guildford; R.Beijing, China 9.920 (Eng to Europe 2000-2200) 33222 at 2023 in Woodhall Spa; AIR via Delhi 9.910 (Eng to Australia, NZ 2045-2230) 22222 at 2213 in Rugby; R.Nac. del Paraguay 9.735 Sp 0800-0400) 35543 at 2313 in Wallsend; RCI via Sackville 9.755 (Eng to USA 2330-0029) SIO322 at 2453 in Redhill.

A few were also noted in the **7MHz (41m)** band: V of Nigeria 7.255 (Ha, Swa, Fr, Eng to W.Africa 0455-2300) SIO433 at 0615 in Hereford; WYFR Okeechobee 7.355 (Eng to Europe, Africa 0600-0800) 34333 at 0647 in N.London; R.Australia via Carnarvon 7.260 (Eng to Asia 1900-2100) 43433 at 2003 in Brenchley; AIR via Aligarh 7.412 (Eng to Europe 2045-2230) 35333 at 2224 in Woking; R.Korea, Seoul 7.550 (Eng to Europe 2145-2245) 34333 at 2145 in Norwich; WHRI Noblesville 7.315 (Eng 0000-1100) 44444 at 0000 in Morden.

The **6MHz (49m)** broadcasts in English to Europe include R.Finland via Pori 6.120 (1405-1430) 45455 at 1410 in Gosforth; R.Riga, Latvia 5.935 (1800-1830) SIO444 at 1800 in Macclesfield; RCI via Skelton 5.995 (1900-1929) SIO322 at 1900 in Co.Fermanagh and 33333 at 1912 in Gibraltar; VOA via Woofferton (1630-2200) 43444 at 1927 in Rugby; R.Sweden via Karlsborg 6.065 (2030-2130) 44444 at 2030 in Morden; R.Japan via Skelton 6.160 (2300-0000) SIO444 at 2315 in Bristol.

### *Equipment Used*

Leo Barr, Sunderland: Matsui MR-4099 or Steepletone MBR7 + r.w. in loft.
Charles Beanland, Gibraltar: Sangean ATS-803 + a.t.u. + r.w or Howes AA2.
Darren Beasley, Bridgwater: Philips D-2935 + Hex loop or a.t.u. + 10m wire.
Vera Brindley, Woodhall Spa: Sangean ATS-803A + r.w.
Kenneth Buck, Edinburgh: Lowe HF-225 + s.w. loop.
Tim Bucknall, Congleton: Sony ICF-2001D.
Scott Caldwell, Warrington: Saisho 2000X or Sony ICF-2001 + 60m wire.
Bill Clark, Rotherham: Sony ICF-2001D + built-in whip.
Neil Clarke, Bury: Fidelity RAD 29.
Robert Connolly, Kilkeel: Sangean ATS-803A + 30m wire in loft or AN-1.
John Coulter, Winchester: Yaesu FRG-7 + r.w.
Ron Damp, Worthing: Sangean ATS-803A + 30m inverted V dipole.
John Eaton, Woking: Lowe HF-225 + Datong A270 in loft.
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.
Ron Galliers, London: Philips D-2935 + a.t.u. + 30m wire.
Robin Harvey, Bourne: Matsui MR-4099 + built-in whip.
Francis Hearne, N.Bristol: Sharp WQT370 + r.w.
Sheila Hughes, Morden: Sony ICF-7600DS or Panasonic DR48 + 15m wire.
Rhoderick Illman, Oxted: Kenwood R-5000 + Magnetic Balun + 19m wire.
Cyril Kellam, Sheffield: Sony ICF-7600DS + AN-1 or 25m wire.
Bryan Kimber, Hereford: Zenith R-7000 or Realistic SX190 + 25m wire.
Eddie McKeown, Co.Down: Tatung TMR-7602.
George Millmore, Wootton, IOW: Sangean ATS-803A or Racal RA17L + loop.
Ken Milne, Basingstoke: Matsui MR—4099 + built-in whip or 6m wire in loft.
Sid Morris, Rowley Regis: Kenwood 5000 + 31m wire or Sangean ATS-803A.
John Nash, Brighton: Kenwood 5000 + Datong AD370 or Magnetic Balun + r.w.
Fred Pallant, Storrington: Trio 2000 + r.w. in loft.
Peter Pollard, Rugby: Sony ICF-2001D + AN-1.
Peter Polson, St.Andrews: Lowe HF-225 + loop or indoor Joystick.
Richard Radford-Reynolds, Guildford: Sangean ATS-803A + 10m wire.
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
Ernest Randall, Dalton: Lowe HF-225 + 15m wire.
Harry Richards, Barton-on-Humber: Matsui MR-4099 + built-in whip or r.w.
Alan Roberts, Quebec, Canada: Lowe HF-225 + 11m dipole.
Chris Shorten, Norwich: Matsui MR-4099 + 10m wire.
Tony Singh, Hitchin: Zenith 7000 + built-in whip.
Stephen Smith, Cwmbran: Lowe HF-225 + a.t.u. + r.w.
Tom Smyth, Co.Fermanagh: Sangean ATS-803A + built-in whip.
Darran Taplin, Brenchley: Yaesu FRG-7700 + FRT-7700 + 35m wire.
Phil Townsend, E.London: Lowe HF-225 + loop or r.w.
Edward Turnbull, Gosforth: Philips D8734 or D8154/05. Panasonic RF-506.
Ted Walden-Vincent, Gt.Yarmouth: Grundig Satellit 1400SL + r.w.
John Wells, E.Grinstead: RCA AR88D + loop.
Jim Willett, Grimsby: Trio 9R-59DS + a.t.u. + X dipole.
Michael Williams, Redhill: Lowe HF-225 + 10m indoor wire.
Julian Wood, Elgin: Kenwood R2000 + Yaesu FRT-7700 a.t.u. + 5m wire.

### *Station Addresses*

***BBC World Service,***
***PO Box 76,***
***Bush House,***
***Strand,***
***London WC2B 4PH.***

***ILR Herewood Radio (WGMS),***
***PO Box 225,***
***Queensgate Centre,***
***Peterborough PE1 1XJ.***

***AWR-Europe,***
***PO Box 383,***
***47100 Forli, Italy.***

***Estonian Radio,***
***English Service,***
***21 Consiori Street,***
***EE0100 Tallinn, Estonia.***

***Radio CBD,***
***PO Box 2358,***
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# watching brief

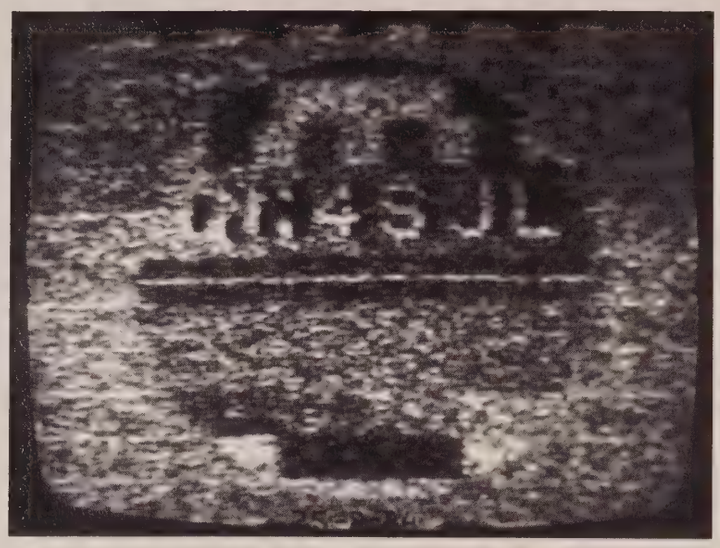
**Andy Emmerson G8PTH**
**71 Falcutt Way, Northampton NN2 8PH**

Back in the 1950s ATVers were pioneers: the early stalwarts in Britain were exploiting the u.h.f. band (70cm) for television on a virtually daily basis at a time when broadcast transmissions of TV on u.h.f. were still very much a thing of the future (1964 in fact). Regular colour transmissions by amateurs date back to the same period too. Even if these experiments contributed nothing to science and the commercial development and exploitation of television, at least those early pioneers deserve our admiration and some recognition.

When it comes to amateur television today, it's difficult to trace a similar kind of innovation. Of course, some people will say that amateurs don't stand a chance: to do anything dramatic you need a microwave laboratory, surface-mount component technologies and a whole host more high-tech facilities that normal mortals cannot aspire to. If amateurs are leading the commercial boys at all, then it must be in the field of packet radio or in effective meteor-scatter communications.

But all this is about to change if Dr John Champa K8OCL has his way. His pet project is ADV - amateur digital video - which squeezes a virtually full-motion colour TV picture into the same bandwidth as a normal voice channel. This, if adopted, could become a world-wide video communication standard. It could also solve the spectrum shortage on 70cm, even allow world-wide ATV via satellites. Sounds too good to be true? Well, let's see...

One of the good-news stories of the past decade has been the hastening speed at which initially costly technologies get cascaded down to amateur prices. Look at hard disks for computers, CDs in hi-fi, even the satellite TV receivers that we ATVers now use for 24cm ATV. You can safely predict the same thing will happen to videophones. What videophones?



**Wideband analogue signals can suffer weak reception or interference from other stations, as seen here. With ADV - amateur digital video - this would be a thing of the past, as explained here.**

## *Videophones*

Good question. Earlier this year consumer videophones were announced on both sides of the Atlantic. In both cases it was indicated that the phones would cost about £500 and would be on sale in time for Christmas (though only time will tell whether these forecasts were right). But there's no doubt these products will reach the market, with the backing of BT and Amstrad in the UK and AT&T in the States. Where there is doubt is whether the public will take to them in the way their protagonists hope - they may turn out the be disastrous flops like the Sinclair C5 car or the Telepoint portable phones.

In any case, these are NOT the videophones that will get ADV off the ground. These initial systems are little better than a succession of colour freeze frames - rather like SSTV in fact. They will also be analogue and will probably use proprietary standards and protocols which are incompatible with anything else. But there is another videophone revolution going on, one which is not dependent on the public's whims or the effect of the recession on consumer spending. This is the digital video revolution, as seen in business videoconferencing. The cost of travel is going up all the time, whilst the true cost of telecommunications is coming down. In the USA particularly, and even in Europe as well, big business is turning to video conferences and desk-to-desk video communications to cut the cost and time of travelling. Over the next few years this trend will grow and grow.

Business video telephony is succeeding because it uses digital techniques to compress a moving colour picture down to 64Kbit/s: that's the data rate (or bandwidth if you like) of a standard voice channel. Pretty clever techniques (often - but not necessarily - using the assistance of a PC) are used to do the squeezing (digital coding) and unsqueezing (decoding), using a prime device called a CODEC (COder-DECoder). Current techniques give acceptable colour contrast and image resolution together with moderate motion rendering, and the technology will undoubtedly improve in the next few years - terrific prizes are there to be won by the successful companies.

## *Down in Price*

So what does this mean for amateurs? Simply that CODECs will plummet in price and you'll be able to buy one on a card to plug into your PC. Connect up your video camera and two-metre rig and you're ready to send real-time video over terrestrial airwaves or even via an OSCAR satellite. Futuristic? Yes! Exciting? Yes! Make believe? Not at all!

Of course this does depend on a number of variables. The speed at which this technology becomes available is one of them and the enthusiasm of ATVers to try something new is another. But the simplicity of the scheme makes it attractive to appliance operators as well as d.i.y.ers, and the whole thing will look a highly tempting proposition to manufacturers and value-added system dealers (the people who design package solutions from several firms' offerings).

So when will it take off - if it does? Probably after 1995. In that year the AMSAT Phase 3D spacecraft is scheduled for launch and this bird is due to have a digital transponder for international packet-radio communications. K8OCL is also pressing for it to have a 64Kbit/s compressed digital interface system on board. By this time people should have caught onto the possibilities and potential of ADV.

ADV has other advantages. The narrow bandwidth of the signal (perhaps less than 100kHz) in comparison with analogue ATV will mean a much higher power density can be used, allowing greater range. Demands on other station equipment will be reduced: e.g. forward gain of antennas need not be sacrificed for the purpose of getting wide bandwidth. Equipment modifications may be unnecessary too.

## *By 1995*

What will it cost? That's difficult to say. In the USA the chipsets are expected to sell for around $1000 at the end of this year (1992), but there will be tremendous commercial pressures to bring this price down. BT is working with IBM to develop new designs of video compression and processing chips, and many other industry giants are eyeing this market. My guess is that by 1995 the cost of adding ADV capability to your PC will be about £200 at today's prices - not desperately cheap but quite affordable if you've already found the cash to buy a computer.

Will it happen? Wait until 1995 to find out!

Andy Emmerson's column appears on a quarterly basis. In the intervening two issues this page is taken up by Brian Oddy's 'Long Wave Maritime Beacons' column and 'Off The Record' by Andy Cadier.

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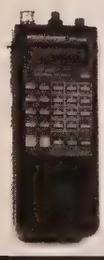

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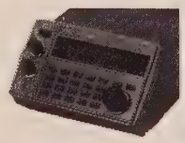

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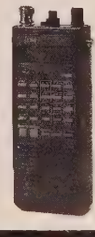

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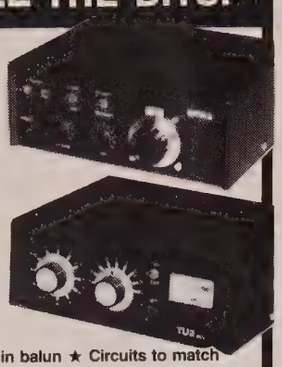

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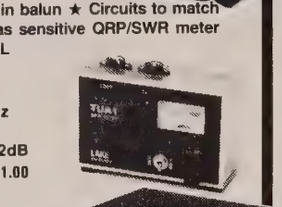

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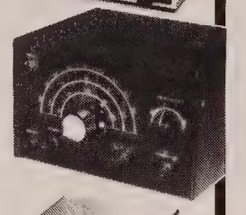

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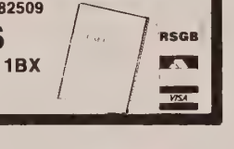

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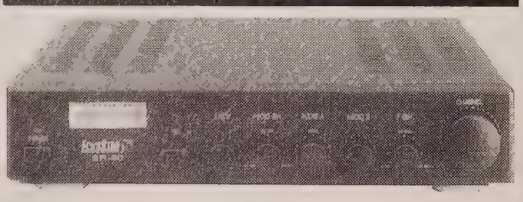

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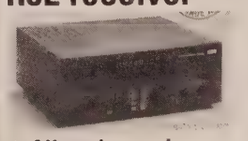

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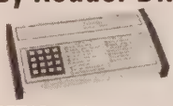

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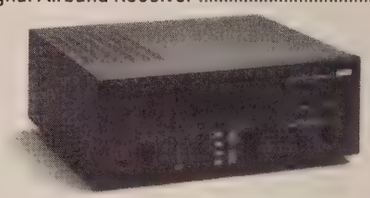

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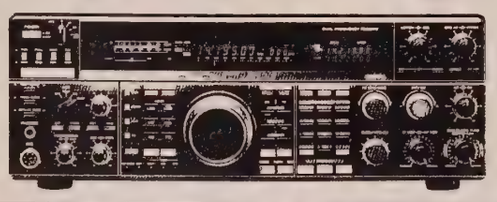

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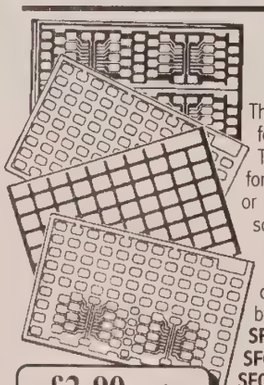

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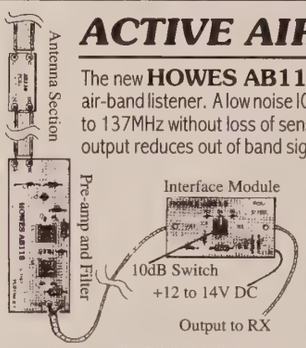


*Drawing of AB118 Modules*

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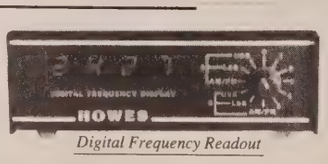


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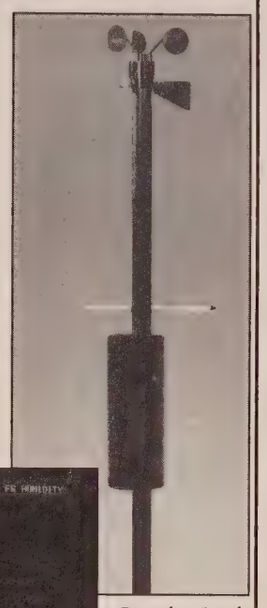

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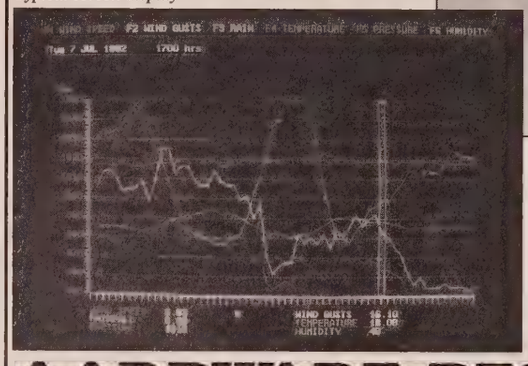
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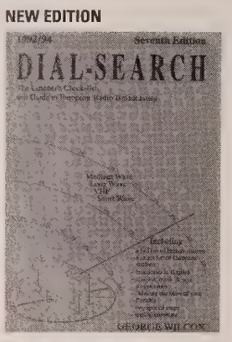


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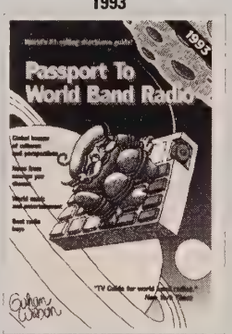


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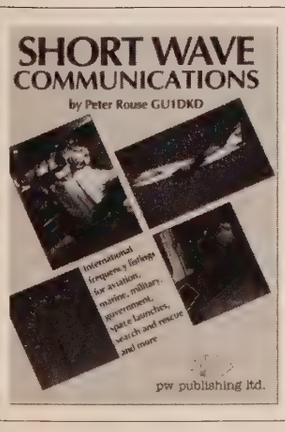


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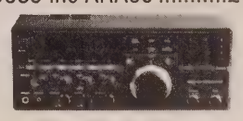

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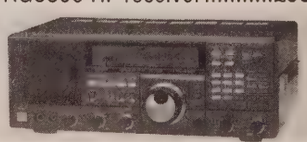

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**Icom 32E** or 32AT in perfect working order. Might consider other makes of 2m/70cm hand-held sets. Tel: (0782) 680745 or (0388) 526218.

**ICS FAX1 demodulator complete.** Also FAX (de) modulator software for PC or BBC. Tel: (0832) 272969.

**Lowe HF-150,** HF-225 or similar. Could part exchange ICF-7600D. Tel: (0423) 865203 North Yorks.

**E-Z Match by KW or SEM** or KW107, KW207, KW109, cash waiting. Richard. Tel: (03986) 215.

**Sailor R501 2182kHz watch keeping receiver.** Tel: (0851) 706448 after 5pm or (0426) 982309 24 hours.

**Sony ICF2001D or Sony ICF PRO80** in new condition. Roberts. 41 Bridge Street, Caernarfon, Gwynedd LL55 1AF.

**Drake R4C** any condition, also TX, also linear. Will collect. Tel: (0724) 782996.

**FRG-7700 general coverage receiver,** reasonable price please. Mr W Coupland, 9 Chiltern Road, Preston Grange, North Shields, Tyne & Wear NE29 9QW.

**Bearcat Pan Crusader X receiver,** must be in good condition and full working order. Wingate. Tel: (0526) 834088 near Sleaford, Lincs.

## EXCHANGE

**Fairmate HP100E** 100 channel wide band scanner with s.w. converter in exchange for general coverage receiver (must have s.s.b.) anything considered. Will travel 100 miles radius of Oxford. Tel: (0993) 775881.

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**Gould 20MHz bench scope** OS300 excellent condition recently checked in exchange for scanner MVT7000, Fairmate HP2000 or w.h.y? Wayne. Tel: (0386) 554450 Worcestershire.

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